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Ninth Biennial Report

(NEW SERIES)

EXCHANGE

OF THE

MINNESOTA STATE BOARD OF HEALTH

AND VITAL STATISTICS OF MINNESOTA

1920-1921

SYNDICATE PRINTING CO., MINNEAPOLIS, MINN.

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Office of the State Board of Health and Vital Statistics,

St. Paul, Minn., November 1, 1923.

To His Excellency, J. A. O. Preus, Governor of Minnesota.

Sir: In accordance with the law which requires that the Minnesota State Board of Health "shall report its doings and discoveries to the legislature at each regular session thereof, with such recommendations as it shall deem useful," I herewith submit to you a report covering the calendar years 1920–1921.

Respectfully submitted,

A. J. CHESLEY,
Secretary and Executive Officer.

STATE BOARD OF HEALTH AND VITAL STATISTICS

PERSONNEL

MEMBERS, 1920

	Term Expires
Dr. Egil Boeckmann, St. Paul, President	1923
Dr. C. L. Scofield, Benson, Vice President	1923
Dr. O. W. Holcomb, St. Paul	1923
Mr. L. P. Wolff, St. Paul	1922
Dr. S. Marx White, Minneapolis	1922
Dr. A. E. Hedback, Minneapolis	1922
Dr. Neill M. Watson, Red Lake Falls	1921
Dr. R. C. Hunt, Fairmont	1921
Mr. F. W. Cappelen, Minneapolis	1921

MEMBERS, 1921

Dr. Egil Boeckmann, St. Paul, President	1923
Dr. C. L. Scofield, Benson. Vice President	1923
Dr. O. W. Holcomb, St. Paul	1923
Mr. L. P. Wolff, St. Paul	1922
Dr. S. Marx White, Minneapolis	1922
Dr. A. E. Hedback, Minneapolis	1922
Dr. Neill M. Watson, Red Lake Falls	1924
Dr. R. C. Hunt, Fairmont	1924
Mr. F. W. Cappelen, Minneapolis	1924

Charles E. Smith, Jr., M.D., Secretary and Executive Officer, resigned May 3, 1921 (died July 31, 1921).

A. J. Chesley, M.D., Acting Secretary and Executive Officer, October 19, 1920, to May 3, 1921; appointed Secretary and Executive Officer, May 3, 1921.

DIVISIONS OF THE STATE BOARD OF HEALTH

1. DIVISION OF RECORDS, State Capitol, St. Paul

O. C. Pierson	Director

2. DIVISION OF VITAL STATISTICS, State Capitol, St. Paul

Gerda C. Pierson	Director

3. DIVISION OF PREVENTABLE DISEASES, University Campus, Minneapolis.

O. McDaniel, M.D.	Director
E. Marion Wade, M.A.	Chief of Laboratories
J. N. Gehlen, M.D.	Epidemiologist
A. R. Blakey, M.D.	Epidemiologist

4. DIVISION OF VENERAL DISEASES, University Campus, Minneapolis.

H. G. Irvine, M.D.	Director
L. W. Feezer, B.S., LL.B.	Assistant Director
D. Stern, M.D.	Field Physician and Bacteriologist
Margaret Sheridan	Supervisor, Social Hygiene Education
Audrey Walton	Chief Social Worker

5. DIVISION OF SANITATION, University Campus, Minneapolis.

H. A. Whittaker, B.A.	Director
J. A. Childs, C.E.	Sanitary Engineer
O. E. Brownell, C.E.	Assistant Engineer
R. W. Archibald, V.M.D.	Bacteriologist

IN MEMORIAM

During this biennium death removed from the service of the state, three faithful servants, each of whom had obtained first rank through merit in a special branch of public health work.

Mr. Frederick Wilhelm Cappelen, appointed to the Board February 1, 1918, because of his excellent work as City Engineer of Minneapolis, and of his international reputation as an authority on sanitary engineering, died October 16, 1921. Mr. Cappelen, as a member of the Executive Committee of the Board, attended every Committee meeting. He was absent only two regular meetings of the Board—the meeting of October 19, 1918, because of influenza, and the meeting of October 11, 1921, a few days before his death. The members of the Board had the deepest respect for his opinions on medical matters as well as concerning his specialty, sanitary engineering.

Dr. Charles E. Smith, Jr., Assistant Secretary from October, 1917, to October, 1919, succeeded Dr. Henry Martyn Bracken, Secretary and Executive Officer since 1897, who resigned to enter federal service. Although distressing physical handicaps made his heavy routine duties extremely difficult, Dr. Smith's enthusiasm, cheerfulness and courage never failed and his work always was well done. In the hope that a rest in a more favorable winter climate in the southwest would restore his health, his physician and the Board persuaded Dr. Smith to accept sick leave in October, 1920. Unfortunately the benefit was only temporary and shortly after returning home he died, July 31, 1921.

Miss Agnes Bacon, Chief Clerk of the Division of Preventable Diseases, died October 13, 1921, having been in continuous service since April, 1904. She was noted for her dependability, accuracy, devotion to duty, good humor and sunny Irish disposition. For years she did the clerical work of the Laboratories on Sundays and holidays without extra pay. The excellence of her work has never been surpassed. Her death brought deep sorrow to her associates.

State Board of Health

Introduction

Report for Biennial Period

By A. J. Chesley, M.D., Secretary and Executive Officer and State Registrar.

MINNESOTA STATE BOARD OF HEALTH

BIENNIAL REPORT FOR 1920-1921

INTRODUCTION

By A. J. Chesley, M.D., Secretary and Executive Officer

The Board's work is limited to certain fields through appropriations made by the legislature for specific purposes only and in those fields by the amounts so appropriated.

The Division of Tuberculosis authorized by the Board April 9, 1918, never functioned as such and was discontinued for lack of funds in 1920.

The Superintendent of Nurses, appointed August 1, 1918, resigned July 1, 1921. This position was not filled because of lack of funds.

The plans for extending the work of the Educational Agent to other phases of the Board's work failed through lack of funds and it still is limited to Venereal Diseases.

The resources and expenditures of the Board are given in the report of the Division of Records.

The Division of Vital Statistics' report shows a general death rate per 1,000 population of 10.7 for 1920, while that of the United States Registration Area for deaths is 13.1. The state birth rate for 1920 is 23.3 while that of the United States Registration Area for births is 23.7. In 1921 the Minnesota death rate per 1,000 population fell to 9.4 while that for the United States Registration Area was 11.6. Again the United States birth rate of 24.3 in 1921 exceeded the Minnesota rate of 23.6.

But Table 6, page 46, shows that Minnesota's annual death rates are lower for the most prominent causes of death than those of the Registration Area.

Table 7, page 47, compares the total deaths from preventable diseases in Minnesota with deaths from all other causes exclusive of still births. The results obtained in those diseases which the Board has been able to properly combat indicate that similar reduction of sickness and death rates will follow when appropriations are granted to combat the other preventable diseases.

The most important fact demonstrated by the morbidity and mortality statistics is that from birth to school age, the years of greatest importance in their physical and mental development, children receive the least attention. Some day the people will realize that every mother must be taught how to keep her children well. Then appropriations will be granted for public health education and to protect children under school age from preventable sickness and death. Much can and ought to be done through educational measures involving only small expenditures but even the modest requests of the Board for funds for education has been refused.

The danger of death resulting when children under 5 years have whooping cough, measles, scarlet fever or diphtheria, is much greater than among older children.

For example in diphtheria and scarlet fever where practically every recognized case is reported the percentage of fatalities was as follows:

FATALITY RATE

	1918		1919		1920		1921	
	Under 1	Under 5	Under 1	Under 5	Under 1	Under 5	Under 1	Under 5
Diphtheria	17.6%	15.5%	14.1%	17.9%	16.2%	16.9%	16.3%	13.4%
Scarlet Fever	17.9%	9.9%	18.5%	9.6%	19.0%	8.7%	27.5%	6.3%

Compare with percentage of deaths at all ages from diphtheria and scarlet fever.

	1918	1919	1920	1921
Diphtheria	7.6%	6.6%	6.7%	5.0%
Scarlet Fever	2.1%	3.6%	3.5%	2.9%

And more striking is the percentage of all deaths from diphtheria, scarlet fever, measles and whooping cough occurring under 5 years of age.

Deaths Under 5 Years

	1918	1919	1920	1921
Diphtheria	31.9%	38.7%	34.8%	35.4%
Scarlet Fever	42.2%	47.3%	43.9%	41.0%
Measles	76.7%	70.5%	72.7%	71.8%
Whooping Cough	94.8%	94.8%	96.6%	93.5%

On the recommendation of Dr. O. McDaniel, Director of the Division of Preventable Diseases, the Board discontinued, July 1, 1921, the Pasteur Institute established and conducted by her since August 1, 1907. Anti-rabic virus for treatment of persons exposed to rabies infection is available now, ready for use by the physician in his office or the home. The Division continues its work in laboratory diagnosis and rabies prevention and advises physicians regarding treatment.

Dr. McDaniel also recommended that the poliomyelitis after-care begun in 1917 be transferred with the Board's appropriation to the State Hospital for Crippled Children. This was done by authority of the legislature July 1, 1921, when complete records of 2,034 cases covering the epidemiology, physical examinations and treatment with spot map of cases then under active supervision were turned over to the State Hospital.

The laboratory work in this division correlated with its epidemiological work is of the greatest importance in the control of typhoid and diphtheria. The tremendous increase in tuberculosis examinations tallies with the improved reporting of cases.

Attention is drawn to the poliomyelitis epidemic of 1921, to the paratyphoid epidemic and to the effect of the Board's work in the prevention of diseases shown by the morbidity statistics in the report of this division.

The Division of Sanitation report emphasizes the need for intensive work for betterment of milk supplies. It also shows the potential menace of the increasing tourist traffic to the health of the people and to the business interests of Minnesota. Proper control of the sanitary phases of the tourist problem must be provided to avoid disaster.

The Division's success in supervision of public water supplies has been marked in spite of its meager appropriation for sanitary engineering of $7,000 per annum. To insure the protection of the public health, the Board should be enabled to maintain uniform routine service to every place in Minnesota with a public water supply. A state program relating to sewage and trade waste pollution of lakes and streams in Minnesota must be worked out. This is of great importance from every standpoint and the Board should be given funds and special authority, if necessary, to conduct sanitary surveys of lakes and streams preliminary to outlining a policy for the future regarding pollution of waters in Minnesota.

The Division of Venereal Diseases is doing an important educational work. It is giving excellent laboratory and medical service to state institutions. In anticipation of curtailment of federal aid, Dr. H. G. Irvine, Director of the Division, has made plans to transfer certain activities to local authorities, thus avoiding a cut in the work established by the division in spite of reduced funds. The response of the public and particularly of the teaching and the medical professions to the endeavors of this Division has been very gratifying to the Board. In venereal disease work, the employment of satisfactory methods is fully as important as the obtaining of good end results.

Although the work of the Board has been affected by many changes in personnel and by the adjustment following the war, the standards of the work have not been lowered and the Board is confident that the legislature will soon increase the Board's appropriations materially because of the results obtained along the lines already authorized by the legislature. The work should be extended into the fields of public health education, child hygiene and industrial hygiene.

Minnesota State Board of Health

Division of Records

Report for Biennial Period

January 1, 1920, to December 31, 1921.

By O. C. PIERSON, Director

MINNESOTA STATE BOARD OF HEALTH

DIVISION OF RECORDS

Biennial Report, January 1, 1920, to December 31, 1921.

By O. C. PIERSON, Director

This division is housed in the same rooms occupied by the Secretary and Executive Officer of the Board, in the State Capitol. It serves very largely as his office force. Since the employment of an assistant secretary was discontinued in 1919, the Director of the Division has served unofficially as such assistant.

The Division handles the general accounts, records and affairs of the Board which are not the special function of the Divisions, or are not purely of an executive character.

These include—

- Accounting,
- Filing,
- Printing,
- Purchases and properties,
- Supplies and equipment,
- Distribution of antitoxin and other therapeutic agents,
- Licensing of embalmers,
- Licensing of rendering plants,
- Nuisance complaints.

The space in the State Capitol, occupied by the Division of Vital Statistics and Division of Records is entirely insufficient and the latter Division is as much handicapped by this fact as by any lack of workers. There seems to be no possibility of securing larger office quarters in the State Capitol. Since four Divisions of the Board are already located on the University Campus and it is to the best interests of the state that these Divisions continue there, it would seem the logical thing to have additional space provided on the University Campus and to remove thereto a large part of the work now being conducted in the State Capitol, particularly the work of the Division of Vital Statistics. It might be well under this arrangement to maintain an administrative office in the State Capitol, possibly some of the work of the Division of Records.

FINANCIAL STATEMENT

This statement covers fiscal years instead of calendar years.

It seems well to again recommend that legislative appropriations to the Board for its regular routine activities be in a lump sum. This has repeatedly been recommended by the Public Examiner in his reports on the examination of the Board's accounts and affairs.

As it now is, a certain amount is appropriated for each activity of the Board and cannot be expended for any other purpose. This necessitates a large amount of extra work in bookkeeping and accounting, but the greatest objection to this practice is due to the fact that such funds cannot always be correctly measured out in advance. An epidemic or other emergency may properly exhaust one of these sums before the end of the fiscal year, and as a result the work, however necessary, will have to cease. This makes it necessary to lay out each line of work so as to provide for a balance to meet emergency which, if it does not occur, means an unexpended balance at the end of the year. This unexpended balance may have been much needed in meeting an emergency in some other field and might otherwise have been used to great advantage to the state in protecting its public health. The unexpended balances shown in the tabulations are almost wholly so explained.

Appropriation in one lump sum would permit the Board to meet emergencies as they occur through increased expenditure, and to offset this by reduced expenditure in other activities where it could safely be done.

The Board has organized its work in Divisions. The work of a Division may be financed by more than one of these specific appropriations, or one appropriation may help finance the work of more than one Division. The amount assigned to a Division is determined by the Board in adopting yearly budgets at the beginning of each fiscal year. These budgets also set salaries, purchase of equipment and supplies, permissible expenses, etc.

The appropriations so allotted to the Divisions for the fiscal year ending June 30, 1922, are as follows:

DIVISIONS

Appropriation for Year Ending June 30, 1922	Administration and Records	Vital Statistics	Preventable Diseases	Venereal Diseases	Sanitation	Child Hygiene	Totals
General maintenance	$18,630	$1,370	....	....	....	....	$20,000
For purchase of free diphtheria antitoxin	10,000	....	....	....	....	....	10,000
For purchase of free silver nitrate ampules	1,000	....	....	....	....	....	1,000
Reporting of births and deaths	....	10,000	....	....	....	....	10,000
Control of venereal diseases	....	....	....	$30,000	....	....	30,000
Maintenance of laboratories	....	....	$26,500	....	$13,500	....	40,000
Control of communicable diseases	....	....	25,000	....	....	....	25,000
Pasteur Institute	....	....	*2,783	....	....	....	2,783
Infantile paralysis after-care	....	....	*2,455	....	....	....	2,455
Support of infectious disease carriers	....	....	*1,090	....	....	....	1,090
Sanitary engineering	....	....	....	....	7,000	....	7,000
Protection for maternity and infancy	....	....	....	....	....	†$5,000	†5,000
Totals	$29,630	$11,370	$57,828	$30,000	$20,500	$5,000	$154,328

*Balances of former appropriations reappropriated. Further appropriations discontinued.

†Not appropriated by legislature but gift from voluntary organization thus enabling state to receive government aid and to inaugurate such work.

FINANCIAL STATEMENT—YEAR JULY 1, 1920, TO JUNE 30, 1921
RESOURCES

	Appropriation	Balances of Previous Appropriations	Refunds and Credits	Totals
Maintenance	$17,720.00	$1,818.62	$115.63	$19,654.25
Free antitoxin	10,000.00	....	....	10,000.00
Prevention of blindness (silver nitrate)	1,000.00	....	....	1,000.00
Vital statistics	10,000.00	445.45	....	10,445.45
Venereal diseases	30,000.00	4,035.62	*19,676.17	53,711.79
United States venereal disease	....	†5,819.62	....	5,819.62
Laboratories	30,000.00	4,211.30	‡4,524.60	38,735.90
Preventable diseases	25,000.00	5,487.17	397.92	30,885.09
Pasteur Institute	11,435.00	286.23	300.00	12,021.23
Infantile paralysis	5,000.00	923.59	....	5,923.59
Infectious disease carriers	500.00	1,004.52	....	1,504.52
Sanitary engineering	7,000.00	330.48	303.04	7,633.52

*$19,572.00 received from United States Government as aid to State in venereal disease work.

†Balance of Government aid for venereal diseases for preceding fiscal year.

‡Includes $1,075.00 received from St. Louis County and Duluth city as aid for Duluth Branch Laboratory and $2,983.51 received from four dairies producing certified milk as aid to cover the work of certifying.

DETAIL OF DISBURSEMENTS—JULY 1, 1920, TO JUNE 30, 1921

	General Maintenance	Vital Statistics	Free Antitoxin	Infectious Disease Carrier	Prevention Blindness	Venereal Diseases
Services	$15,231.33	$9,224.05	$835.00			$36,122.55
Telephone and telegraph	258.52					251.45
Travel	401.31					4,174.83
Freight and express	27.64	36.45	36.85			293.67
Repairs						121.88
Rent						
Printing	123.60					951.61
Postage	688.66	356.75	25.06		$75.15	538.40
Stationery and office supplies	707.16	275.77	39.70		90.60	1,713.50
Laboratory supplies						6,446.39
Furniture and fixtures	412.75	17.00	42.00			641.96
Ice			88.00			
Antitoxin			8,932.50			
Silver nitrate					780.00	
Miscellaneous				$413.84		
Totals	$17,850.97	$9,910.02	$9,999.11	$413.84	$945.75	$51,256.24
Balances	1,713.28	535.43	.89 (Cancelled)	1,090.68	54.25	2,455.55

	U. S. Venereal Diseases	Laboratories	Sanitary Engineering	Preventable Diseases	Pasteur Institute	Infantile Paralysis	Totals
Services	$3,364.44	$21,573.30	$7,633.52	$23,664.95	$7,163.67	$1,725.69	$126,538.50
Telegraph and telephone		497.40		450.63		11.95	1,469.95
Travel		3,888.66		3,202.44	33.44	1,040.34	12,741.02
Freight and express		653.25		46.21			1,094.07
Repairs					245.38		367.26
Rent		478.00					478.00
Printing	2,151.65	71.90		131.61			3,430.37
Postage		414.97		1,079.58			3,178.57
Stationery and office supplies	188,53	652.32		984.48		284.68	4,936.74
Laboratory supplies	115.00	4,599.69		61.32	1,774.69	321.30	13,318.39
Furniture and fixtures		481.28		280.73			1,875.72
Ice							88.00
Antitoxin							8,932.50
Silver nitrate							780.00
Miscellaneous					20.20	84.07	518.11
Totals	$5,819.62	$33,310.77	$7,633.52	$29,901.95	$9,237.38	$3,468.03	$179,747.20
Balances		5,425.13		983.14	2,783.76	2,455.56	17,496.78

FINANCIAL STATEMENT—YEAR JULY 1, 1921, TO JUNE 30, 1922

RESOURCES

	Appropriation	Balances of Previous Appropriations	Refunds and Credits	Totals
Maintenance	$20,000.00	$1,713.28	....	$21,713.28
Free antitoxin	10,000.00	....	....	10,000.00
Prevention of blindness (silver nitrate)	1,000.00	54.25	....	1,054.25
Vital statistics	10,000.00	535.43	$16.62	10,552.05
Venereal diseases	30,000.00	2,455.55	*3,081.90	35,537.45
Laboratories	40,000.00	5,425.13	†7,084.60	52,509.73
Preventable diseases	25,000.00	983.14	18.87	26,002.01
Pasteur Institute	Discontinued	2,783.76	22.20	2,805.96
Infantile paralysis	Discontinued	2,455.56	....	2,455.56
Infectious disease carriers	....	1,090.68	....	1,090.68
Sanitary engineering	7,000.00	....	....	7,000.00
Maternity and infancy	‡5,000.00	....	....	5,000.00

*$3,076.90 received in fees collected at the University Venereal Disease Clinic.

†Includes $975.00 received from St. Louis County and Duluth city as aid for Duluth Branch Laboratory, and $5,464.33 received from four dairies producing certified milk as aid to cover the work of certifying.

‡Not appropriated by Legislature, but a gift from the Minnesota Public Health Association. Under the Federal law such gifts are considered as appropriations, and matched by an equal amount of money from the United States Treasury.

DETAIL OF DISBURSEMENTS—JULY 1, 1921, TO JUNE 30, 1922

	General Maintenance	Vital Statistics	Free Antitoxin	Typhoid Fever Carriers	Prevention of Blindness	Venereal Diseases
Services	$17,530.98	$9,894.42	$960.00	$2.50	....	$26,959.43
Traveling expenses	1,176.44	10.80	37.92	....	....	2,010.88
Freight and express	17.18	22.74	36.05	....	....	115.44
Telephone and telegraph	181.21	.30	1.36	....	....	364.31
Repairs	....	....	....	....	....	119.96
Printing	366.16	251.86	....	....	....	919.60
Postage	475.27	309.78	....	....	$54.25	324.20
Stationery and office supplies	433.57	....	89.26	....	....	164.96
Laboratory supplies	....	....	....	....	....	822.65
Furniture and equipment	48.75	62.15	....	....	....	138.15
Antitoxin	....	....	8,875.00	....	....	....
Silver nitrate	....	....	....	....	1,000.00	....
Rent	....	....	....	....	....	....
Subscriptions	35.10	....	....	....	....	49.50
Ford car	....					
Auto supplies and repairs	....	....	....	....	....	....
Duluth office	....	....	....	....	....	....
Labor	....	....	....	....	....	....
Miscellaneous	162.65	....	....	....	....	78.45
Totals	$20,427.31	$10,552.05	$9,999.59	$2.50	$1,054.25	$32,067.53
Balances	1,285.97	....	.41 (Cancelled)	1,088.18	....	3,469.92

	Laboratories	Sanitary Engineering	Preventable Diseases	Pasteur Institute	Infantile Paralysis	Protection for Maternity and Infancy	Totals
Services	$35,861.26	$7,000.00	$17,978.05	....	$70.00	$1,125.00	$117,381.64
Traveling expenses	3,922.05	....	3,431.16	....	128.67	190.31	10,908.23
Freight and express	545.77	....	86.95	....	....	....	824.13
Telephone and telegraph	561.16	....	705.43	....	....	....	1,813.77
Repairs	....	....	....	....	....	....	119.96
Printing	552.27	....	197.19	....	....	....	2,287.08
Postage	222.72	....	843.60	....	....	....	2,229.82
Stationery and office supplies	235.08	....	372.60	....	....	....	1,295.47
Laboratory supplies	5,123.34	....	89.02	1,139.60	1,066.50	....	8,241.11
Furniture and equipment	487.44	....	312.62	214.33	....	....	1,263.44
Antitoxin	....	....	....	....	....	....	8,875.00
Silver nitrate	....	....	....	....	....	....	1,000.00
Rent	689.00	....	....	....	....	....	689.00
Subscriptions	....	....	....	....	....	....	84.60
Ford car	....	....	....	....	321.23	....	321.23
Auto supplies and repairs	....	....	....	....	350.62	....	350.62
Duluth office	324.48	....	....	....	....	....	324.48
Labor	....	....	425.66	....	....	....	425.66
Miscellaneous	305.61	....	132.92	36.78	5.80	....	722.21
Totals	$48,830.18	$7,000.00	$24,575.20	$1,390.71	$1,942.82	$1,315.31	$159,161.45
Balances	3,679.55	....	1,426.81	1,415.25	512.74	3,684.69	16,563.11

MONEYS RECEIVED AND CREDITED TO THE GENERAL REVENUE FUND OF THE STATE

	Years Ending	
Source.	June 30, 1921.	June 30, 1922.
Certified copies of birth and death records	$182.27	$287.10
Embalmers' licenses and renewals	1,214.90	228.00
Rendering establishments' licenses	125.00	70.00
Totals	$1,522.17	$585.10

BUILDINGS, FURNITURE, EQUIPMENT AND SUPPLIES

A SUMMARY OF AN INVENTORY OF THE GOODS IN POSSESSION OF THE BOARD ON JUNE 30, 1921 SHOWS THE FOLLOWING:

	Divisions of Administration and Records, State Capitol	Division of Vital Statistics State Capitol	Division of Sanitation, University Campus	Division of Venereal Diseases, University Campus	Division of Preventable Diseases, University Campus	Division of Preventable Diseases, Duluth, Minn.	Totals
Building	....	....	....	....	$6,000.00	....	$6,000.00
Furniture	$3,178.25	$1,927.90	$618.90	$1,930.65	2,643.00	$197.50	10,496.20
Equipment	2,164.84	795.00	2,341.60	3,147.10	7,056.50	565.50	16,070.54
Supplies	704.02	302.45	4,012.62	1,277.05	3,206.00	141.50	9,643.64
Automobile	....	....	....	....	250.00	....	250.00
Diphtheria antitoxin	9,435.00	....	....	....	....	....	9,435.00
Silver nitrate	427.50	....	....	....	....	....	427.50
Salvarsan	....	....	....	505.00	....	....	505.00
Totals	$15,909.61	$3,025.35	$6,973.12	$6,859.80	$19,155.50	$904.50	$52,827.88

PRINTED MATTER

The foregoing summary of the Inventory does not include printed matter. The following is a summary of it:

	Number of Different Forms	Total Pieces
Letterheads	4	53,500
Book paper	2	6,500
Envelopes	10	15.230
Blank sheets	59	148,516
Blank cards	40	147,875
Labels	7	28,800
Placards	22	28,275
Lists	3	1,800
Circulars	37	77,100
Pamphlets	28	39,560
Pamphlets on venereal diseases	10	155,300
Totals	222	702,456

Most of the printing is done through the State Printing Commission and paid for from its funds. A considerable number of the circulars and pamphlets have been furnished free by the United States Government. The Division of Venereal Diseases has paid for all its printing from the State appropriations and Governmental aid. Some of the pamphlets and forms are now more or less obsolete and seldom used. For these reasons it is not feasible to give the money value and no attempt to do so in the inventory, has been made.

The large number of different forms required will be noted. Due consideration is always given the question of state economy and the inadequacy of the Printing Commission's appropriation before requisitioning the State Printer. For such reasons the Board has in some instances done without printed matter which a private corporation would have secured as a matter of economy and good business. For like reasons it has often been necessary to do with an inadequate supply.

One of the functions of the Board under Section 4639, General Statutes of Minnesota 1913, is to gather, publish and diffuse proper information upon all subjects to which its duties relate. Due to this necessity for confining its printing requests to absolute essentials, little has been done in recent years to exercise this function. A greater portion of the funds of the State Printing Commission should be made available for the Board or a special appropriation for the purpose passed. This recommendation is made with all due regard and sympathy for prevailing public sentiment against waste through worthless or unnecessary public printing.

PURCHASES

Every effort is made to limit the purchase of all goods to actual requirements and then orders are placed only after written approval of the Director of the Division and the Executive Officer, or if an unusual or large item, by direct approval of the Board itself.

Upon printed blanks for the purpose each Director makes requisition for goods wanted and submits same to the Executive Officer for approval and signature and then to the Division of Records, which latter makes order on the State Purchasing Agent or business house concerned, files duplicate of approved requisition with proper Division and makes record of transaction. Requisitions for printed matter are also handled in a similar manner.

FREE DIPHTHERIA ANTITOXIN

The highest grade of diphtheria antitoxin is purchased by the Board at approximately one-fourth the commercial price. Before the state provided free antitoxin many cases of diphtheria were not given it, or in sufficient quantity because of the cost. Most states now furnish it free of charge as in Minnesota. The reduction in the number of deaths from diphtheria in Minnesota, from 72.0 per one hundred thousand population in 1888, to 45.0 in 1900, and 9.1 in 1921, is conceded to be very largely due to its use.

Any physician in the state having cases or probable cases of diphtheria can get free antitoxin at any distributing station. He is required to fill out the receipt blank in duplicate which accompanies each package, giving thereon the name and address of the person for whom it is used, and file such receipt with the health officer in charge of the distributing station from which it was secured. If any of the packages so secured are not used at once the physician is required to return them to the distributing station within one week.

Approximately 350 distributing stations in charge of the local health officers have been established in all the cities and many important villages in the state.

The Director recognizes the responsibility of the Board for securing a record of the purchase and ultimate disposition of every package of this serum. Every effort is made to make the health officers in charge of these distributing stations understand this responsibility, and to secure such receipt for every package they give out, or to secure its return if unused.

The physicians of the state generally have been advised of these conditions by circular letters and printed articles in medical journals.

When the distributing agent gives out antitoxin he is required to fill out a distribution blank showing the number and size of packages, and to whom issued, and to send the duplicate copy of this blank to the State Board of Health. From this record this Division is enabled to follow up the failure of physicians to file receipts or return unused packages, and many and repeated letters have been written to this end. In spite of this, we have each year a relatively small number of lost or unaccounted for packages, due either to the negligence of the health officer in charge of the distributing station, or to the failure of physicians to file receipts, return unused packages, or to respond to our requests for information concerning same.

Occasionally a physician will state that he has used the antitoxin, but has no memoranda by which he can identify when, where or how it was used. It has been deemed necessary in a few instances to advised distributing agents that they cannot again issue antitoxin to such physician unless he files the data regarding its use at the time he receives it, and in a few instances we have discontinued the distributing station because of the persistent negligence and lack of co-operation on the part of the distributing agent.

While the statement in the last Biennial Report that, the appropriation of $10,000.00 per annum is not sufficient to meet the demands for free antitoxin still holds true, this has been somewhat offset by securing better prices in bids from the producers.

The following shows its distribution and use for the biennial period ending June 30, 1922:

DIPHTHERIA ANTITOXIN

	1,000	3,000	5,000	10,000
Used July 1, 1918, to June 30, 1920	3.342	258	3,955	1,249
On hand at stations, July 1, 1920	2,145	314	2,099	696
On hand at Capitol, July 1, 1920	.....	.....	1,000	.....
Total stock on hand, July 1, 1920	2,145	314	3,099	696
Purchase, Distribution and Use, July 1, 1920, to June 30, 1922:				
Stock on hand	2,145	314	3,099	696
Purchased	5,650	.....	5,500	4,500
Total available stock	7,795	314	8,599	5,196
Total used	4,724	49	4,171	3,301
Lost or unaccounted for	126	42	95	16
On hand at distributing stations	1,762	92	1,579	835
On hand at Capitol	738	.....	1,480	384
Returned to producers for exchange	445	131	1,274	660
Total	7,795	314	8,599	5,196

FREE SILVER NITRATE SOLUTION

The regulations of the Board adopted under authority conveyed by Section 4646, General Statutes Minnesota 1913, paragraph 7A, require attending physicians and midwives to treat the eyes of new born infants with a 1 per cent solution of silver nitrate. This treatment insures the infant against blindness through the possible development of ophthalmia neonatorum. The solution purchased is put up in beeswax ampules, each containing enough for one treatment. A supply of ampules is mailed yearly to each physician and midwife in the state and more on request.

The difficulty or uncertainty of securing from the druggists a solution of full potency and known strength because of the instability of silver nitrate in bulk, warrants its purchase and free distribution in the form of ampules. These ampules preserve it without deterioration for several years. The appropriation of $1,000.00 per annum is adequate.

SALVARSAN

The purchase and free distribution of salvarsan or salvarsan substitutes was begun coincident with the creation of the Division of Venereal Diseases in 1918. The cost was very largely provided for by moneys received as government aid. With the discontinuance of such aid and necessary curtailment of activities and expense the distribution of salvarsan has more and more been confined to use on indigents and persons who could not afford to buy it for their treatment.

The amount distributed in 1920 and 1921 is shown in the following:

	1920	1921
Doses of .4 size	1,766	1,083
Doses of .6 size	5,713	4,642
Doses of .9 size	814	101
Totals	8,293	5,826=14,119

EMBALMERS

On December 31, 1921, there were 1,012 embalmers holding the license of the Minnesota State Board of Health.

During the biennial period 82 original licenses were issued and 955 licenses were renewed. $1,372.00 was received as fees. This money is credited to the General Revenue Fund of the state and does not therefore directly aid the Board in its work of conducting examinations, issuing licenses, etc., as was originally intended when the embalmers license law was passed.

The Board holds one examination each year. It can charge no fee for it but only for the license itself. Anyone is permitted to take this examination regardless of schooling, general or embalming, and is granted a license if he or she pass and can make affidavits as to the required experience and age.

In addition the Board assists the University of Minnesota in teaching its students and conducting the examinations of the University School of Embalming. It therefore holds such examinations as by the Board and grants licenses to successful students if they have attained the required age and experience.

It becomes necessary for the Board to employ some help to conduct its examinations, since its regular employees are not qualified in all the subjects of the examination. This is partly covered by an Embalmer's Examining Committee of five members appointed by the Board on the nomination of the Minnesota Funeral Directors' Association. This committee also serves the Board in an advisory capacity in relation to the duties of embalmers and undertakers in the reporting of deaths, transportation of the dead, etc.

The present members of the committee are as follows:

Mr. M. J. Filiatrault, Duluth, Minn.
Mr. Emil Schroeder, St. Paul, Minn.
Mr. E. C. Davies, Minneapolis, Minn.
Mr. V. M. Grady, Duluth, Minn.
Mr. T. R. Lawler, Rochester, Minn.

RENDERING ESTABLISHMENTS

The Board's regulations provide for the licensing and annual renewal thereof of establishments that render material for other than food purposes. The original license fee is $10.00 and the annual renewal fee is $5.00.

These fees were intended to cover the cost of occasional inspections by the Board but since it was ruled some years ago that all such fees must be credited to the General Revenue Fund of the State and the appropriations for the Board's work have been insufficient to meet the regular demands on it, inspections have not recently been made except in two or three cases where special petition or complaint has been filed.

There are 14 plants licensed for which $195.00 in fees was received in 1920 and 1921.

NUISANCES

While this is a matter which is not directly the function of the Division of Records, to the Director of that Division has been turned over the handling of many nuisance complaints because of his long experience with such matters. It seems well therefore to say something about nuisances in this report.

While nuisances seldom have any real public health significance, the law places the responsibility of dealing with them on the local health officer. This is probably the most disagreeable duty he has and frequently involves him in disagreeable personal squabbies. Sections 4674 and 4675 G. S. 1913, define his procedure. These Sections say he must serve an order to clean up or remove, and if not complied with, employ someone to do it and the cost thereof is charged against the property as a tax, but this sum may not exceed the amount of $25.00. This limits his power in the abatement of nuisances to compelling the cleaning of privies, removal of manure piles, rubbish, garbage, etc.

It might be well to amend this law extending the health officers power in such a way as to enable him to force the discontinuance and removal of hog pens, chicken yards and other businesses or occupations when he found it necessary.

Section 8085, G. S. 1913, however, provides that the individual affected by a nuisance may sue in the courts for injunction and damages. It may be contended that it is not advisable to place in the hands of one man, the health officer, the power to condemn and compel the removal of a business or building, and that such should not only be accomplished by a court of proper jurisdiction, as is contemplated by said Section 8085.

It has been estimated that 15 per cent of the correspondence addressed to the headquarters of the Board in the State Capitol, relate to nuisance matters, and this percentage is much larger during the spring and early summer months. It should not be necessary to have a physician handle these ordinary cleanup and nuisance matters. It does not require medical qualifications, and the village or city marshal, or some other layman may be just as well or even better qualified to do this than is the local medical health officer.

Section 1268, G. S. 1913, paragraph 17, empowers villages to adopt and enforce ordinances concerning all matters of a nuisance character. All village and city councils should adopt such ordinances and place their enforcement under the village or city marshal. This would result in a definite understanding of what is or is not permitted, and prosecutions under the ordinances would easily be accomplished. The state law provides no penalty of fine or imprisonment.

The disposal of garbage and refuse in a municipality is a matter of local concern and does not usually affect the state as a whole, so the manner and method of dealing with it is properly a matter of home rule and it would not seem advisable therefore to recommend the passage of state laws, which attempt to further define various kinds of nuisances and the special steps to abate them. It is respectfully urged that all municipalities in the state provide for this by the adoption of local ordinances.

Minnesota State Board of Health

Division of Vital Statistics

Report for Biennial Period

January 1, 1920, to December 31, 1921

By GERDA C. PIERSON, Director

REPORT OF

THE DIVISION OF VITAL STATISTICS, MINNESOTA STATE BOARD OF HEALTH

GERDA C. PIERSON,Director

INTRODUCTION

The following tabular estimate for the years 1920 and 1921 shows the general routine work of this division.

SUMMARY OF ROUTINE WORK

			Years	
			1920	1921
Records of births and deaths received and registered			84,819	84,262
Individual letters written			4,861	5,000
Form letters sent out concerning incomplete and incorrect returns, tracing unreported births, etc.			11,258	8,193
Names on embalmers' monthly reports checked against original death records			13,180	11,932
Supplemental reports containing given names of children received and names added to original records:				
	1920	1921		
State at large	4,228	4,649		
Minneapolis	4,879	5,010		
St. Paul	1,311	2,215		
Duluth	483	......		
Total	10,901	11,874	10,901	11,874
Certified copies of records issued:				
	1920	1921		
Births	58	115		
Deaths	305	371		
Total	363	486	363	486
Transcripts of birth and death records issued:				
	1920	1921		
Births	18	2		
Deaths	1	2		
Total	19	4	19	4
Records copied for clerks of court (excluding returns for Minneapolis and St. Paul):				
	1920	1921		
Births	43,144	44,321		
Deaths	19,278	17,218		
Total	62,422	61,542	62,422	61,542
Mortality cards showing deaths due to preventable diseases furnished the Division of Preventable Diseases			3,619	2,622
Death reports of infants under two years of age checked against the original birth reports to ascertain if the latter were on file			489	1,971
Arranging and numbering of 1919 birth and death records preparatory to binding:				
Births		53,561		
Deaths		26,367		
Total		79,928	79,928	......
Arranging and numbering of 1920 birth and death records preparatory to binding:				
Births		57,860		
Deaths		27,365		
Total			......	85,225

Checking of duplicate transportation permits received from various railroad companies to ascertain whether or not the original death certificate had been received from registrar at place of death.

Letters of instruction to new registrars.

Notices sent to registrars of delinquent districts.

Notices sent to licensed embalmers (sub-registrars) concerning delinquent monthly reports.

Transcripts of birth and death records sent to United States Census Bureau each month.

Compilation of monthly Mortality Bulletins.

Compilation of various statistical tables.

This statement indicates in a vague way only what it means to handle so large a number of certificates and reports. The amount of clerical work in a division of vital statistics is so extensive and necessarily has to be so accurate and systematic that it is impossible for anyone to appreciate what it means without spending considerable time observing the endless details connected therewith.

It will be noted that 169,081 original records were received for the biennium, not to mention the many thousands of monthly reports received from embalmers, supplemental reports containing the given names of children, etc. The work of compiling authentic vital statistics depends, of course, entirely upon the correctness and completeness of the original records. Each and every certificate must be carefully scrutinized and if wrong in any particular, followed up through correspondence. In this office a rule has been made never to return an original record. Corrections and completions are secured on copies. About 17 per cent of the death records are queried as regards cause of death alone, in order that each case may be classified as closely as possible. About 10 per cent of the death records are queried for other irregularities, and 24 per cent of the birth records in order to complete and correct them.

It would at first thought seem a simple matter for the responsible party to make a correct report in the beginning. Experience in this division, however, very clearly proves that many capable physicians and undertakers fail to familiarize themselves with the essentials of a correct record. As a result, there falls upon the state office the necessity of writing thousands of letters of inquiry for essential facts omitted or improperly stated. The importance of a correct record is clearly demonstrated when it becomes necessary for interested parties to produce certified copies needed for various purposes. Not until correct information is secured and inserted on the original record in red ink, as provided for by law, is the certificate placed on permanent file, which means holding up hundreds of reports each month, awaiting further data.

Mistakes and omissions prove costly and time-consuming. Weeks and months are frequently needed in order to make the records of any legal or particular value.

It is pleasing and most encouraging to note the attitude taken by the larger percentage of physicians and undertakers in Minnesota in reply to inquiries sent them by this division. Their willingness to furnish the necessary information reveals that they appreciate its importance after their attention has been called to mistakes which they have made. On the other hand, there is a certain class of men who pay but small attention to inquiries sent them, and it is usually found on making a personal investigation that these men are as careless and indifferent about their own business and the keeping of proper records as they are in furnishing to this board the information we must have in order to make our vital statistics of value.

WHY SHOULD THE BABIES BE REGISTERED?

It is to the advantage of everyone to have an accurate accounting of the people of a state or community. In most states a record is kept of the number of live stock, the amount of grain raised, etc. Would it not seem equally important that the number of our children be known? This means an accurate knowledge of the state's human resources. Studies in infant mortality which are worth while are impossible unless there is a complete and accurate registration of births.

OBLIGATION OF PHYSICIANS AND MIDWIVES

There is not a conscientious physician who does not wish to do all he can to advance medical science. He can do his share by promptly and accurately registering all births occurring in his practice. Physicians and midwives should look upon the reporting of births as a duty they owe to the child. Their obligations in attending obstetrical cases have not been completed until each birth which they attend has been properly recorded.

All parents should be vitally interested in seeing to it that the births of their children are registered. This division is called upon every day to issue certified copies of birth records in order to establish proof of age, nativity, etc. More and more, the various industrial commissions require proof of age of applicant before employing any child. It is not an infrequent occurrence for the parents to state that the child is of working age when the latter is not the case. The record of birth if on file establishes the needed proof.

The child at his birth is helpless and unable to foresee the many demands which may be made upon him later for his birth certificate. He does not know that a correct record of his birth is one of the important factors in all forms of child welfare work.

Questions of heirship, legitimacy, etc., may be promptly and effectually settled only by properly certified copies of the original birth records. There is also a large and growing demand for birth certificates needed in securing passports to foreign countries.

LEGAL USES OF DEATH RECORDS

Certified copies of these records are more frequently needed in the collection of insurance claims than for any other purpose, but they are also required in the settlement of estates, pension claims, etc.

THE VALUE OF VITAL STATISTICS IN THEIR RELATION TO PUBLIC HEALTH WORK

Of real value to the state is the complete registration of births and deaths in order to study the high death rate of infants during the first year of life, with a view to prevention. Unless all births are properly registered, no authentic infant mortality rates can be reached, for the latter rate is obtained by dividing the number of deaths of infants under one year of age by the number of living births reported for the year. It will thus readily be seen that if any appreciable number of births are not recorded, the death rate will be correspondingly high and published reports incorrect as a result.

These statistics constitute the foundation on which to base public health work, and are valuable in proportion to their accuracy and completeness. Complete and accurate morbidity statistics of preventable diseases constitute one of the pillars on which public health work rests, while for final and permanent study, nothing can take the place of birth and death registration. Deaths constitute the end results, and a large percentage of them are the records of failures which were not prevented by physicians, health officials and citizens working together.

COMMENTS ON TABLES NOS. I TO XIX

TABLE NO. I

Number of births and deaths and birth and death rates covering a period of twelve years, 1910 to 1921, inclusive.

The total number of deaths reported during the years 1920 and 1921 are respectively, 25,659 and 22,826, the rates per 1,000 population being respectively 10.7 and 9.4.

The birth rate for Minnesota as indicated by the number of births reported during the years from 1910 to 1921 would seem to be increasing. On account of the great improvement in the completeness of the birth registration, however, it is improper to conclude that the birth rate is really substantially higher than it was a decade ago. The average birth rate of 23.3 for the last five years of the period, as compared with the rate of 22.3 for the first five years of the period may also be accounted for by the improved registration.

TABLE NO. II

Births and deaths and stillbirths reported by months and the birth and death rates per 1,000 population for a period of seven years, 1915 to 1921, inclusive.

TABLES NOS. III AND IV

Living births and birth rates, deaths and death rates, infant deaths and infant mortality rates, and stillbirths as reported for 1920 and 1921. These are distributed as to county; districts with a population of 5,000 and upwards separately shown.

TABLE NO. V

Living births, puerperal deaths and maternity death rates per 1,000 living births for 1920 and 1921, distributed as to county, cities of the first class separately shown.

TABLE NO. VI

The comparative annual death rates for Minnesota and the Registration Area for the more prominent causes during the decade ending with 1920. It may be noted that of the causes as shown in this table the rate for Minnesota throughout the entire decade is consistently lower than that for the Registration Area, and on the whole, in the case of typhoid fever, diphtheria, influenza complicated with pneumonia, tuberculosis (all forms), organic heart diseases, infantile diarrhoea (under two years), nephritis, and auto accidents. In short, Minnesota shows higher rates only in certain years in the case of measles, scarlet fever, whooping cough, and cancer. Minnesota has a higher death rate for whooping cough than the Registration Area in one year only, namely, 1912. The death rate for measles and scarlet fever for Minnesota fluctuates when compared with the Area, being sometimes higher and sometimes lower.

Minnesota has continuously had a higher cancer death rate than the Registration Area since 1916. This is undoubtedly accounted for by the number of deaths resulting from cancer at the Mayo Clinic in Rochester (figures include deaths of non-residents of the state), and through the great efforts put forth by the Division of Vital Statistics to secure as accurate information as possible as to the primary cause of death for classification purposes. Each case where death is reported as due to a tumor or growth, and the nature of same is not specified, is promptly followed up to ascertain if it was malignant or benign. A large percentage of replies to these inquiries result in throwing the case into the group of malignant diseases.

The causes as they appear in this comparison were not selected to show Minnesota in an especially advantageous position, but to show the principal causes of death in the Registration Area as compared with those in Minnesota. The only causes so selected in the figures of the Census Bureau not shown here are "flu" independent of pneumonia, and homicide. Because of the frequency with which influenza and pneumonia appear as joint causes, only the combined rate has been given. The number of homicides and the homicide rate is so low that it has been omitted. See Table No. VI for the annual total deaths for homicide.

TABLE NO. VII

Deaths from all causes and stillbirths for a period of twelve years, 1910 to 1921, inclusive, such diseases as are commonly referred to as preventable, separately shown.

The specific causes showing substantial decreases include tuberculosis, measles, diarrhoeal diseases of children, and influenza. The number of influenza deaths for 1920 is 2,201, and for 1921 is 142—a decrease of 2,059. This chiefly accounts for the difference in the grand total.

The variations in the other causes mentioned are not proportionately large as compared with "flu," except as regards typhoid fever and diphtheria. (The free distribution of diphtheria anti-toxin was begun in 1915).

It is notable, however, that the number of tuberculosis deaths for 1921 is 277 less than for the previous year, and, in fact, less than the number reported for any year in the last two decades. The tuberculosis death rate appears to have been decreasing with slight interruption since somewhere between 1910 and 1912.

The history of mortality for diarrhoeal diseases of children since 1910 is one of steady decline, the highest figure for the past three years being less than half the average number during the earlier years of the decade. Table No. V, dealing with maternal and infant deaths, shows this more clearly.

The comparative rates for Minnesota and the general rates for the Registration Area are very flattering to Minnesota, not only as regards the general death rate, but also in connection with most of the preventable causes.

TABLE NO. VIII

General group of diseases causing death in Minnesota in 1920 and 1921, as classified according to the International List of Causes of Death. These figures have been taken from the Mortality Reports of the Bureau of the Census.

It will be noted that after infectious and general diseases, which include all forms of cancer, the largest item is the group of diseases associated with the circulatory system, namely, the diseases of the heart and arteries. The outstanding item in the group of diseases of the respiratory system is pneumonia, and in the non-venereal group of diseases of the genito-urinary system the most frequent cause of death is nephritis.

TABLE NO. IX

Deaths from external causes during a period of 12 years, 1910 to 1921, inclusive. These figures have been taken from the Mortality Statistics, Bureau of the Census, and shows deaths from external causes specifically classified. There is considerable interest in this class of causes of death, probably on account of the spectacular or dramatic circumstances from which they frequently result.

There does not seem to be a very substantial variation in the number of suicides. The tendency is slightly toward a reduction in proportion to population. The favored instrument of suicide continues, without exception, to be firearms.

"Traumatism by crushing," it will be noted, is the outstanding cause of accidental deaths. The injuries in the nature of crushing are so inflicted chiefly by means associated with transportation. Next in order of frequency in accidental deaths is drowning.

Conflagration, separately listed, is relatively not half so frequently the cause of death as are burns sustained in other ways. The year 1918 is an outstanding exception to this statement: 342 deaths by conflagration were reported. About 300 of these were due to the forest fires in the northern part of the state in that year. Probably many other deaths resulted from this fire in remote places which were never reported, remains not being found.

In the early years of the period covered by this table, railroad accidents caused considerably more than 200 deaths per year, and automobiles less than 50. In 1918, for the first time, automobile accidents caused more deaths (183) than did railways (169), and since that time the number due to automobiles has steadily increased until in 1921 it exceeded all other forms of accident combined resulting from transportation.

TABLE NO. X

Deaths and death rates from tuberculosis in Minnesota for a period of 22 years, 1900 to 1921, inclusive. Morbidity reports are shown also for 1910 to 1921, inclusive.

TABLE NO. XI

Deaths from tuberculosis, distributed as to county, during a period of five years, 1917 to 1921, inclusive, classified as to pulmonary tuberculosis and other forms of the disease.

TABLE NO. XII

Deaths from tuberculosis in cities with a population of 5,000 and over for 1917 to 1921, inclusive.

The outstanding point in this table is the apparently excessive number of deaths from this disease in Fergus Falls, Rochester, and Faribault. This is explained by the fact that in all these cities are located large state institutions having high death rates from all causes, tuberculosis included. For example, in 1921, out of 39 deaths from tuberculosis (all forms) reported from Fergus Falls, 28 were of non-resident inmates of the State Hospital for the Insane. Faribault is also to be noted as having an outstanding tuberculosis death rate. The relatively low rate for Hibbing is also noteworthy.

The rates for cities of the first class, Minneapolis, St. Paul, and Duluth, vary considerably during the period. The numbers of deaths from tuberculosis in Duluth have steadily decreased until they numbered but 76 in 1921. St. Paul has the highest rate for cities of the first class.. The rate for the cities of 5,000 and over is on an average of 20 to 100,000 population higher than for the state as a whole.

TABLE NO. XIII

Deaths from typhoid fever during a period of 12 years, 1910 to 1921, inclusive, distributed as to county and registration districts with a population of 5,000 and over.

TABLE NO. XIV

Deaths from typhoid fever for the state and for the three largest cities (Minneapolis, St. Paul, and Duluth), for a period of 22 years, 1900 to 1921, inclusive.

TABLES NOS. XV AND XVI

Living births, stillbirths, infant deaths and infant mortality rates (per 1,000 living births) and puerperal deaths in registration districts with a population of 5,000 and over for the years 1920 and 1921.

TABLE NO. XVII

Deaths among children under five years of age, stillbirths and puerperal deaths for 1920 and 1921, distributed as to county; cities with a population of 5,000 and over separately shown.

TABLE NO. XVIII

Living births, illegitimate births and illegitimate birth rates for the state and the three largest cities, reported annually from 1913 to 1921, inclusive.

TABLE NO. XIX

Deaths for 1914 to 1921, inclusive, from all causes (exclusive of stillbirths) for all ages; also the number of deaths occurring among children under five years of age.

TABLE NO. I

BIRTHS AND BIRTH RATES PER 1,000 POPULATION, DEATHS AND DEATH RATES PER 1,000 POPULATION, FOR MINNESOTA FOR THE YEARS 1910 TO 1921 INCLUSIVE, EXCLUSIVE OF STILL-BIRTHS

Year.	Total Births.	Rate.	Total Deaths.	Rate.
1910	44,092	21.1	22,868	10.9
1911	45,561	21.5	21,893	10.3
1912	48,440	22.5	20,502	9.5
1913	50,147	22.9	22,799	10.4
1914	51,945	23.4	23,382	10.5
1915	55,233	24.6	22,755	10.1
1916	55,680	24.4	24,285	10.6
1917	54,928	23.6	23,955	10.3
1918	55,873	23.8	31.380	13.4
1919	51,691	21.7	24,874	10.4
1920	55,864	23.4	25.659	10.7
1921	58,042	24.0	22.826	9.4

TABLE NO. II

TOTAL LIVING BIRTHS AND TOTAL DEATHS BY MONTHS, 1915 TO 1921 INCLUSIVE, AND BIRTH AND DEATH RATES PER 1,000 POPULATION (STILL-BIRTHS SEPARATELY SHOWN)

BIRTHS

	1915	1916	1917	1918	1919	1920	1921
*Population	2,246,761	2,279,603	2,312,445	2,345,287	2,378,129	2,386,371	2,418.267
January	4,493	4,700	4,633	4,473	4,171	4,711	4,799
February	4.347	4,474	4,374	4,526	4,070	4,842	4,621
March	4,991	5,111	5.045	5,290	4,839	4,911	5,254
April	4,682	4,896	4,507	4,947	4,596	4,619	4,929
May	4.507	4,746	4,402	4,789	4,422	4,932	5,038
June	4,435	4,602	4,493	4,626	4,114	4.676	4,726
July	4.781	4,837	4,905	4,921	4,116	4,917	4,969
August	4.843	4,660	4,838	4,718	3,903	4,965	5,063
September	4,690	4,361	4,544	4,717	4,081	4,671	4,771
October	4,563	4,425	4,450	4,624	4,405	4,357	4,719
November	4,428	4,369	4,290	4,212	4,334	3,871	4,510
December	4,473	4,499	4,447	4,030	4,640	4,392	4,643
Total	55,233	55,680	54,928	55,873	51,691	55.864	58,042
Birth rate	24.6	24.4	23.6	23.8	21.7	23.4	24.0

DEATHS

	1915	1916	1917	1918	1919	1920	1921
January	1,995	2,750	*2,550	2,011	3,004	2,509	2,040
February	1,983	2,092	2,134	1,893	2,237	3,860	1,996
March	2,205	2,280	2,255	2,199	2,779	2,419	2,296
April	2,126	2,067	2,176	2,603	2,379	2,127	2,134
May	1,837	2,249	2,201	2,335	2,146	2,242	1,964
June	1,750	1,753	1,936	1,804	1,720	1,839	1,691
July	1,647	1,951	1,878	1,684	1,699	1,782	1,738
August	1,604	1,698	1,610	1,626	1,647	1,680	1,718
September	1,686	1,737	1,697	1,793	1,627	1,665	1,681
October	1,713	1,764	1,788	4,432	1,794	1,788	1,884
November	1,799	1,786	1,823	5,102	1,810	1,851	1,803
December	2,410	2,168	1,910	3,898	2,032	1,897	1,881
Total	22,755	24,295	23,955	31,380	24,874	25,659	22,826
Death Rate	10.1	10.6	10 3	13.4	10.4	10.7	9.4
Stillbirths	1,603	1,708	1,622	1,797	1,487	1,648	1,697

*Estimated populations except for year 1920.

TABLE NO. III

TOTAL BIRTHS AND TOTAL DEATHS AND RATES PER 1,000 POPULATION; ALSO DEATHS UNDER ONE YEAR OF AGE AND INFANT MORTALITY RATES PER 1,000 LIVING BIRTHS; ALSO STILL-BIRTHS.

1920

County.	Living Births.	Birth Rate.	Deaths.	Death Rate.	Infant Deaths.	Infant Mortality Rate.	Still-Births.
Aitkin	408	26.5	122	8.1	22	53.9	17
Anoka	309	19.5	177	11.3	20	65.3	6
Becker	605	26.4	228	10.0	60	99.2	20
Beltrami	777	28.7	296	10.9	58	74.6	32
Benton (Ex. of)	366	29.7	108	8 8	39	106.6	3
St. Cloud	32	18 5	9	5.2	2	62.5	1
Big Stone	287	29.0	91	9.4	16	56.3	9
Blue Earth (Ex. of)	395	20.8	173	9.1	24	60.7	4
Mankato	305	24.4	213	17.1	16	52.1	9
Brown	547	24.4	192	8.5	22	40.2	9
Carlton	502	25.9	164	8.5	31	61.8	15
Carver	364	21.5	134	7.9	19	52.2	9
Cass	410	25.7	191	12.0	41	100.0	4
Chippewa	420	26.7	168	10.7	32	76.2	14
Chisago	284	19.7	133	9.1	9	31.7	9
Clay	479	22.0	170	7.9	26	54 3	12
Clearwater	198	23.1	53	6.2	7	35.4	4
Cook	29	15.7	10	5.4	1	34.5	1
Cottonwood	369	24.6	151	10.4	23	62.3	7
Crow Wing	700	28.2	320	13.0	58	82.8	24
Dakota	578	20 0	305	10.5	48	83.0	23
Dodge	303	24.0	133	10.6	10	33.0	6
Douglas	403	21.2	191	10.0	28	69.5	15
Faribault	469	22.3	176	8.4	28	59.7	17
Fillmore	523	20.6	243	9.6	33	63.1	14
Freeborn	601	23.9	263	10.7	41	68 2	11
Goodhue	576	18.7	364	11 9	36	62.5	22
Grant	205	20.9	85	8.7	13	63.4	7
Hennepin (Ex. of)	513	14.7	304	8.7	29	56.5	9
Minneapolis	9,182	24.1	4,713	12.3	603	65.7	325
Houston	259	18.4	147	10.5	18	69.4	13
Hubbard	231	22.7	81	8 0	16	69.2	4
Isanti	253	19.1	110	8.3	18	71.1	7
Itasca	634	26.6	214	9.0	44	69.4	16
Jackson	406	25.4	128	8.1	25	61.6	12
Kanabec	197	21.7	54	5.9	8	40.6	4
Kandiyohi	509	23.1	226	10 2	24	47.2	20
Kittson	287	27.0	80	7.6	21	73.2	6
Koochiching	259	19.2	102	7.6	17	65.6	5

TABLE NO. III—Continued

County.	Living Births.	Birth Rate.	Deaths.	Death Rate.	Infant Deaths.	Infant Mortality Rate.	Still-Births.
Lac Qui Parle	369	23.7	130	8.4	23	62.3	16
Lake	140	17.0	64	7.8	5	35.6	5
Le Sueur	317	17.8	158	8.9	19	59.9	13
Lincoln	306	27.2	81	9.0	11	35.9	3
Lyon	479	25.4	145	7.7	28	58.5	8
McLeod	427	20.9	162	7.9	22	51.5	9
Mahnomen	177	28.6	60	9.7	19	107.3	5
Marshall	587	30.2	153	7.9	30	51.1	9
Martin	519	24.6	175	8.3	24	46.8	8
Meeker	422	23.3	178	9.8	25	59.2	11
Mille Lacs	357	25.2	139	9.8	22	61.6	13
Morrison	698	27.0	203	7.9	33	47.3	8
Mower (Ex. of)........	331	20.9	135	8.5	24	72.5	7
Austin	234	23.1	123	12.2	25	106.8	12
Murray	370	27.1	114	10.3	16	43.2	8
Nicollet	277	18.4	324	21.5	17	61.4	3
Nobles	473	26.4	156	8.7	26	55.0	6
Norman	327	22.0	135	9.1	26	79.5	4
Olmsted (Ex. of)......	322	22.5	140	9.8	23	71.4	8
Rochester	336	24.5	1,012	73.7	31	92.3	13
Otter Tail	1,199	23.6	622	12.2	76	63.4	21
Pennington	281	23.2	147	12.3	22	78.3	8
Pine	476	22.5	173	8.2	25	52.5	12
Pipestone	342	28.4	99	8.2	18	52.6	12
Polk	822	22.2	401	10.8	61	74.2	33
Pope	320	23.5	127	9.3	22	68.0	5
Ramsey (Ex. of).......	167	16.9	73	7.4	10	59.8	2
St. Paul	5,174	22.0	2,958	12.6	374	72.3	177
Red Lake	193	26.6	81	11.2	25	129.5	3
Red Wood	564	27.0	139	6.6	29	51.4	13
Renville	492	20.8	172	7.3	28	56.9	6
Rice (Ex. of)..........	331	19.2	163	9.5	16	48.3	11
Faribault	244	22.0	232	21.0	26	106.6	15
Rock	311	28.4	85	7.8	12	38.6	9
Roseau	337	25.2	101	7.6	22	65.4	6
St. Louis (Ex. of).....	1,768	22.4	781	10.0	124	70.1	56
Duluth	2,446	24.7	1,007	10.2	182	74.4	101
Hibbing	447	29.6	133	8.8	31	69.3	13
Virginia	375	26.7	119	8.5	32	85.3	10
Scott	287	20.1	122	8.3	13	45.3	10
Sherburne (Ex. of)....	211	24.1	78	8.9	8	37.9	6
St. Cloud	6	6.7	3	3.3	0	0.0	0
Sibley	331	21.2	132	8.4	25	75.5	6
Stearns (Ex. of)......	1163	27.0	360	8.5	74	63.6	32
St. Cloud	452	34.1	204	15.4	40	88.5	18
Steele	367	20.3	165	9.1	21	57.2	7
Stevens	237	24.2	91	9.3	21	88.6	6
Swift	415	27.5	134	8.9	33	79.5	10
Todd	630	24.2	197	7.6	29	46.0	18
Traverse	194	24.5	57	7.2	11	56.7	2
Wabasha	416	23.2	215	12.0	27	64.9	9
Wadena	321	30.0	121	11.5	24	74.8	10
Waseca	293	20.7	123	8.7	15	51.2	5
Washington	393	16.6	254	10.7	27	68.7	13
Watonwan	274	22.0	116	9.3	19	69.3	7
Wilkin	275	27.0	85	8.4	18	65.5	6
Winona (Ex. of)......	301	20.7	116	8.0	15	49.8	12
Winona	385	20.1	243	12.7	19	49.4	17
Wright	632	22.0	291	10.0	39	61.7	13
Yellow Medicine......	429	25.9	146	11.4	24	55.9	13
Total	55,943	.....	25,675	.....	3,672	.....	1,647

TABLE NO. IV

TOTAL BIRTHS AND TOTAL DEATHS AND RATES PER 1,000 POPULATION; ALSO DEATHS UNDER ONE YEAR OF AGE AND INFANT MORTALITY RATES PER 1,000 LIVING BIRTHS; ALSO STILL-BIRTHS.

1921

County.	Living Births.	Birth Rate.	Deaths.	Death Rate.	Infant Deaths.	Infant Mortality Rate.	Still-Births.
Aitkin	385	24.4	101	6.4	16	41.6	19
Anoka	328	20.4	198	12.3	19	57.9	6
Becker	621	22.2	219	9.3	36	58.0	9
Beltrami	718	25.4	239	8.5	49	68.2	24
Benton (Ex. of)	349	27.6	66	5.2	14	40.1	12
St. Cloud	35	19.2	11	6.0	3	85.7	2
Big Stone	300	30.5	94	9.6	20	66.7	11
Blue Earth (Ex. of)	388	20.4	144	7.6	23	59.3	9
Mankato	333	26.0	200	15.6	23	69.1	12
Brown	551	24.2	198	8.7	27	49.0	8
Carlton	490	24.9	134	6.8	37	75.5	20
Carver	349	20.6	102	6.1	10	28.7	12
Cass	445	26.9	178	10.8	34	76.4	15
Chippewa	434	27.0	102	6.3	23	53.0	10
Chisago	301	20.6	135	9.3	17	56.5	12
Clay	479	21.7	170	7.7	31	64.7	16
Clearwater	216	24.5	62	7.0	15	69.4	5
Cook	27	14.1	12	6.3	1	37.0	1
Cottonwood	385	25.9	82	5.5	10	26.0	8
Crow Wing	762	29.6	254	9.9	51	66.9	26
Dakota	617	20.9	288	9.7	36	58.3	16
Dodge	280	22.1	119	9.4	13	46.4	7
Douglas	435	22.6	173	8.9	20	46.0	5
Faribault	518	24.5	154	7.3	29	56.0	12
Fillmore	536	21.2	225	8.9	33	61.6	17
Freeborn	577	23.0	210	8.4	35	60.7	18
Goodhue	610	19.8	325	10.6	37	60.7	25
Grant	197	19.9	71	7.2	5	25.4	6
Hennepin (Ex. of)	594	16.8	320	9.1	22	37.0	10
Minneapolis	9,438	24.0	4,290	10.9	522	55.3	346
Houston	297	21.2	125	8.9	17	57.2	6
Hubbard	247	24.3	89	8.7	14	56.7	7
Isanti	288	21.5	100	7.5	18	62.5	9
Itasca	656	26.3	206	8.3	54	82.3	24
Jackson	411	25.4	118	7.3	29	70.6	11
Kanabec	234	24.7	58	6.1	8	34.2	4
Kandiyohi	541	24.0	198	8.8	30	55.5	15
Kittson	268	24.8	79	7.3	25	93.2	11
Koochiching	316	21.6	105	7.2	28	88.6	14
Lac Qui Parle	368	23.6	123	7.9	19	51.6	11
Lake	134	16.2	57	6.9	12	89.6	4
Le Sueur	345	19.3	142	7.9	19	55.1	8
Lincoln	266	23.2	76	6.6	19	71.4	6
Lyon	506	26.2	138	7.1	24	47.4	8
McLeod	454	21.4	184	8.9	30	66.1	3
Mahnomen	209	31.4	50	7.5	18	86.1	5
Marshall	522	26.2	170	8.5	23	44.1	11
Martin	557	25.7	164	7.5	39	70.0	16
Meeker	415	22.7	166	9.1	33	79.5	10
Mille Lacs	345	23.4	136	9.2	19	55.1	21
Morrison	696	26.6	221	8.5	47	67.5	15
Mower (Ex. of)	325	20.4	89	5.6	14	43.1	8
Austin	255	24.0	111	10.5	15	58.8	8
Murray	359	25.8	80	5.7	22	61.3	8
Nicollet	265	17.5	285	18.8	9	33.4	5
Nobles	493	26.9	128	7.0	23	46.7	17
Norman	337	22.3	103	6.8	15	44.5	6
Olmsted (Ex. of)	327	23.0	118	8.3	13	39.8	7
Rochester	383	26.2	817	55.8	37	96.6	4
Otter Tail	1,228	23.8	541	10.5	76	61.9	33
Pennington	311	24.9	120	9.6	22	70.7	6
Pine	506	23.1	153	7.0	26	51.4	11
Pipestone	371	29.8	102	8.2	21	56.6	15
Polk	919	24.7	337	9.0	58	63.1	21
Pope	345	25.1	116	8.4	19	55.1	6

TABLE NO. IV—Continued

County.	Living Births.	Birth Rate.	Deaths.	Death Rate.	Infant Deaths.	Infant Mortality Rate.	Still-Births.
Ramsey (Ex. of)......	174	17.4	85	8.5	5	28.7	11
St. Paul	5,609	23.6	2,555	10.7	304	54.2	203
Red Lake	202	27.4	44	6.0	11	54.5	4
Redwood	492	23.1	116	5.4	28	56.9	7
Renville	562	23.7	170	7.2	33	58.7	15
Rice (Ex. of).........	350	20.3	138	8.0	12	34.3	7
Faribault	275	24.1	207	18.1	16	58.2	9
Rock	298	26.9	78	7.0	16	53.7	7
Roseau	384	28.2	85	6.2	15	39.1	10
St. Louis (Ex. of).....	1,814	22.5	566	7.0	113	62.3	64
Duluth	2,427	23.8	932	9.1	156	64.3	68
Hibbing	479	30.5	113	7.3	32	66.8	16
Virginia	332	22.8	135	9.3	27	81.3	11
Scott	318	22.3	131	9.2	22	69.2	6
Sherburne (Ex. of)...	190	21.2	69	7.7	10	52.6	8
St. Cloud	3	3.3	3	3.3	0	0.0	0
Sibley	345	22.0	127	8.1	18	52.2	11
Stearns (Ex. of)......	1,176	27.3	306	7.1	64	54.4	26
St. Cloud	484	34.7	180	12.9	37	76.4	14
Steele	400	21.8	153	8.3	14	35.0	4
Stevens	281	28.1	69	6.9	14	49.8	5
Swift	389	25.2	116	7.5	30	77.1	12
Todd	700	26.4	175	6.6	24	34.3	17
Traverse	209	26.3	55	6.9	13	62.2	4
Wabasha	415	23.2	212	11.8	25	60.3	6
Wadena	347	31.5	122	11.1	23	66.3	7
Waseca	336	22.9	126	8.9	21	62.5	6
Washington	393	16.5	225	9.5	33	84.0	11
Watonwan	309	24.5	126	10.0	28	90.6	5
Wilkin	265	25.6	78	7.5	20	75.5	5
Winona (Ex. of)......	289	20.0	126	8.7	21	72.7	2
Winona	425	22.1	245	12.7	31	72.9	15
Wright	670	23.3	228	7.9	29	43.3	18
Yellow Medicine.......	407	24.3	97	5.8	15	36.9	10
Total	57,946	.....	22,826	.....	3,366	.....	1,697

TABLE NO. V.

LIVING BIRTHS, PUERPERAL DEATHS AND MATERNITY DEATH RATE PER 1,000 LIVING BIRTHS REPORTED, FOR THE YEARS 1920 AND 1921.

County.	1920			1921		
	Living Births.	Puerperal Deaths.	Maternity Death Rate.	Living Births.	Puerperal Deaths.	Maternity Death Rate.
Aitkin	408	1	2.4	385	1	2.6
Anoka	309	2	6.5	328	0	0.
Becker	605	1	1.7	621	2	3.2
Beltrami	777	9	11.6	718	3	4.2
Benton	398	2	5.0	384	1	2.6
Big Stone	287	1	3.5	300	1	3.3
Blue Earth	700	7	10.0	721	4	5.5
Brown	547	3	5.5	551	2	3.6
Carlton	502	2	4.0	490	2	4.1
Carver	364	1	2.7	349	1	2.9
Cass	410	4	9.8	445	1	2.2
Chippewa	420	2	4.8	434	3	6.9
Chisago	284	0	0.0	301	1	3.3
Clay	479	0	0.0	479	4	8.4
Clearwater	198	0	0.0	216	0	0.0
Cook	29	0	0.0	27	0	0.0
Cottonwood	369	1	2.7	385	1	2.6
Crow Wing	700	4	5.7	762	2	2.6
Dakota	578	1	1.7	617	4	6.5
Dodge	303	2	6.6	280	0	0.0
Douglas	403	0	0.0	435	1	2.3
Faribault	469	3	6.4	518	2	3.9
Fillmore	523	2	3.8	536	2	3.7

TABLE NO. V—Continued

County.	1920 Living Births.	1920 Puerperal Deaths.	1920 Maternity Death Rate.	1921 Living Births.	1921 Puerperal Deaths.	1921 Maternity Death Rate.
Freeborn	601	5	8.3	577	3	5.2
Goodhue	576	3	5.2	610	1	1.6
Grant	205	1	4.9	197	1	5.1
Hennepin (Ex. of)	513	4	7.8	594	3	5.1
Minneapolis	9,182	64	7.0	9,438	70	7.4
Houston	259	1	3.9	297	1	3.4
Hubbard	231	2	8.7	247	0	0.0
Isanti	253	0	0.0	288	0	0.0
Itasca	634	8	12.6	656	6	9.1
Jackson	406	2	4.9	411	1	2.4
Kanabec	197	0	0.0	234	0	0.0
Kandiyohi	509	3	5.9	541	3	5.5
Kittson	287	1	3.5	268	0	0.0
Koochiching	259	2	7.7	316	4	12.7
Lac Qui Parle	369	1	2.7	368	2	5.4
Lake	140	1	7.1	134	4	29.8
Le Sueur	317	3	9.5	345	1	2.9
Lincoln	306	1	3.3	266	1	3.8
Lyon	479	0	0.0	506	1	2.0
McLeod	427	3	7.0	454	1	2.2
Mahnomen	177	1	5.6	209	2	9.6
Marshall	587	3	5.1	522	3	5.7
Martin	519	6	11.6	557	1	1.8
Meeker	422	2	4.7	415	2	4.8
Mille Lacs	357	2	5.6	345	4	11.6
Morrison	698	2	2.9	696	5	7.2
Mower	565	4	7.1	580	1	1.7
Murray	370	3	8.1	359	2	5.6
Nicollet	277	1	3.6	265	0	0.0
Nobles	473	4	8.5	493	2	4.1
Norman	327	2	6.1	337	0	0.0
Olmsted	658	2	3.0	710	9	12.7
Otter Tail	1,199	10	8.0	1,228	8	6.5
Pennington	281	4	14.2	311	2	6.4
Pine	476	2	4.2	506	2	4.0
Pipestone	342	0	0.0	371	3	8.1
Polk	822	11	13.4	919	3	3.3
Pope	320	1	3.1	345	1	2.9
Ramsey (Ex. of)	167	0	0.0	174	0	0.0
St. Paul	5,174	37	7.1	5,609	37	6.6
Red Lake	193	1	5.2	202	0	0.0
Redwood	564	2	3.5	492	0	0.0
Renville	492	2	4.1	562	3	5.3
Rice	575	7	12.2	625	4	6.4
Rock	311	1	3.2	298	2	6.7
Roseau	337	1	3.0	384	3	7.8
St. Louis (Ex. of)	2,590	29	11.2	2,625	17	6.5
Duluth	2,446	20	8.2	2,427	19	7.8
Scott	287	0	0.0	318	1	3.1
Sherburne	217	1	4.6	193	0	0.0
Sibley	331	0	0.0	345	4	11.6
Stearns	1,615	9	5.6	1,660	11	6.6
Steele	367	2	5.4	400	0	0.0
Stevens	237	0	0.0	281	0	0.0
Swift	415	2	4.8	389	5	12.9
Todd	630	4	6.3	700	1	1.4
Traverse	194	1	5.2	209	0	0.0
Wabasha	416	1	2.4	415	1	2.4
Wadena	321	2	6.2	347	3	8.6
Waseca	293	1	3.4	336	0	0.0
Washington	393	2	5.1	393	2	5.1
Watonwan	274	2	7.3	309	1	3.2
Wilkin	275	1	3.6	265	1	3.8
Winona	686	2	2.9	714	3	4.2
Wright	632	1	1.6	670	3	4.5
Yellow Medicine	429	4	9.3	407	0	0.0
Total	55,943	348		57,946	312	

TABLE NO. VI

ANNUAL DEATH RATES FOR THE MORE PROMINENT CAUSES (1911 TO 1920 INCLUSIVE) FOR MINNESOTA AS COMPARED WITH THE REGISTRATION AREA.

		Typhoid Fever	Measles	Scarlet Fever	Whooping Cough	Diphtheria	"Flu" and Pneumonia Combined	Tuberculosis (All Forms)	Cancer	Organic Diseases of Heart	Infantile Diarrhoea (Under Two Years)	Nephritis	Automobile Accidents
1911	Registration Area	21.	10	8.9	11.3	18.9	149	159	74.4	141	77.5	97.7	....
	Minnesota	13.4	5.2	8.9	8.1	14.9	103	118	67.3	89.4	39.8	62.9	....
1912	Registration Area	16.5	7	6.7	9.3	18.2	142	149	77.1	142	70.4	103.2	....
	Minnesota	10.6	1.0	4.8	9.8	7.8	75	108	69.8	89.1	29.2	70.6	....
1913	Registration Area	17.9	12.8	8.7	10	18.9	144	147	79	138	75.3	103	....
	Minnesota	10.8	9.5	8.5	6.6	10.1	89	107	75.2	92.9	41.3	72.6	....
1914	Registration Area	15.5	6.8	6.6	10.4	17.9	136	147	79.6	142	66.1	102.6	....
	Minnesota	10.1	3.6	15.1	8.7	16.2	102	107	76.9	102	33.9	74.4	....
1915	Registration Area	12.4	5.4	3.6	8.1	15.7	149	146	81.4	147	59.8	105.1	5.9
	Minnesota	6.8	3.9	6.5	7.4	8.6	100	101	79.4	101	26.4	78.2	3.8
1916	Registration Area	13.3	11.1	3.3	10.2	14.5	164	142	82.1	150	65.8	105.6	7.3
	Minnesota	5.5	12.7	5.3	9.7	7.5	104	104	86.3	106	28	76.4	6.3
1917	Registration Area	13.5	14.3	4.2	10.5	16.6	167	147	82	153	64.3	107.9	9
	Minnesota	4.3	5.6	4	4.1	10.9	105	102	83.9	104	24.6	73.3	7
1918	Registration Area	12.6	10.8	3	16.9	13.9	587	150	80.3	153	68.7	97.6	9.3
	Minnesota	3.7	4.3	6.8	13.3	12.3	390	104	83.2	113	22.3	70.3	7.9
1919	Registration Area	9.2	3.9	2.8	5.5	14.7	222	125	80.5	131	44.2	88.1	9.4
	Minnesota	3.3	4	3.9	4.1	12.9	166	94	89.1	104	19.5	67.8	7.2
1920	Registration Area	7.8	8.8	4.6	12.5	15.3	208	114	83.4	141	44	89.4	10.4
	Minnesota	3.0	6.6	4.8	12.4	10.3	148	89.6	95.4	113	21	66	7.4
1921	Registration Area	9.0	4.3	5.3	9.1	17.7	62	99.4	86.0	157.1	41.9	85.4	11.5
	Minnesota	3.5	1.3	7.8	6.4	9.0	71.7	75.3	89.4	118.5	15.9	55.7	8.9

TABLE No. VII

TOTAL NUMBER DEATHS FROM ALL CAUSES FOR A PERIOD OF TWELVE YEARS
(CERTAIN DISEASES SEPARATELY LISTED)

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Pulmonary tuberculosis	1,780	1,979	1,840	1,864	1,948	1,843	1,945	1,944	2,129	1,861	1,856	1,544
Other forms of tuberculosis	478	477	446	493	440	437	455	410	414	383	301	336
Pneumonia	1,933	2,229	1,742	1,931	2,197	2,117	1,723	1,962	1,957	1,416	1,506	1,587
Diphtheria	566	355	173	215	354	200	170	254	280	302	243	220
Measles	263	112	20	196	80	86	273	124	87	101	159	32
Scarlet fever	284	190	104	189	322	144	117	89	154	96	117	191
Smallpox	7	7	4	7	7	5	1	20	7	9	15	25
Whooping cough	172	180	221	157	208	180	234	98	248	98	297	154
Acute anterior poliomyelitis	201	59	23	30	8	21	103	11	25	16	18	102
Epidemic cerebro-spinal meningitis	20	44	48	27	35	30	34	186	35	30	26	29
Typhoid fever	688	293	233	236	225	156	129	99	87	78	71	90
Diarrheal diseases of children	1,799	1,092	852	1,196	1,019	686	795	702	621	500	557	503
Puerperal septicemia	113	148	100	101	105	86	102	119	96	90	146	141
Cancer	1,391	1,425	1,473	1,625	1,703	1,780	1,955	1,936	1,939	2,113	2,285	2,193
Influenza	75	151	85	184	122	258	499	257	7,521	2,579	2,201	142
External causes—												
Accidents	1,496	1,401	1,440	1,688	1,625	1,481	1,762	1,592	1,856	1,493	1,506	1,518
Suicides	242	302	271	304	347	361	286	219	291	315	265	312
Homicides	68	82	60	66	99	76	72	77	68	72	72	100
Total deaths from preventable diseases	11,576	10,526	9,135	10,509	10,844	9,947	10,655	10,099	17,815	11,552	11,641	9,219
Total all other causes (exclusive of still-births)	11,292	11,367	11,367	12,290	12,538	12,808	13,640	13,856	13,565	13,322	14,018	13,607
Grand total	22,868	21,893	20,502	22,799	23,382	22,755	24,295	23,955	31,380	24,874	25,659	22,826
Still-births	1,373	1,503	1,541	1,577	1,661	1,607	1,702	1,622	1,729	1,487	1,648	1,696

TABLE No. VIII

*DEATHS—1920

1.	All causes	25,722
2.	General diseases	8,377
3.	Diseases of the nervous system and of the organs of special sense	2,272
4.	Diseases of the circulatory system	3,548
5.	Diseases of the respiratory system	2,376
6.	Diseases of the digestive system	2,159
7.	Nonvenereal diseases of the genito-urinary system and annexa	2,003
8.	The puerperal state	439
9.	Diseases of the skin and of the cellular tissue	82
10.	Diseases of the bones and of the organs of locomotion	75
11.	Malformations	365
12.	Early infancy	1,713
13.	Old age	292
14.	External causes	1,848
15.	Ill-defined diseases	173

*DEATHS—1921

1.	All causes	22,806
2.	Epidemic, endemic, and infectious diseases	3,179
3.	Other general diseases	3,285
4.	Diseases of the nervous system and of the organs of special sense	2,315
5.	Diseases of the circulatory system	3,358
6.	Diseases of the respiratory system	1,973
7.	Diseases of the digestive system	2,122
8.	Nonvenereal diseases of the genito-urinary system and annexa	1,771
9.	The puerperal state	329
10.	Diseases of the skin and of the cellular tissue	70
11.	Diseases of the bones and of the organs of locomotion	44
12.	Malformations	376
13.	Early infancy	1,609
14.	Old age (senility)	311
15.	External causes	1,910
16.	Ill-defined diseases	154

*Taken from Mortality Reports, Bureau of the Census.

TABLE No. IX

*DEATHS DUE TO EXTERNAL CAUSES—1910 TO 1921, INCLUSIVE

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
External causes	1,806	1,785	1,771	2,058	2,071	1,918	2,071	1,932	2,215	1,953	1,848	1,910
Suicides (total)	242	302	271	304	347	361	282	289	291	316	269	315
By poison	54	65	67	72	76	54	42	44	40	31	44	36
By asphyxia	18	14	18	9	23	42	29	26	17	28	16	19
By hanging or strangulation	59	70	56	65	79	80	58	69	76	92	61	65
By drowning	17	20	15	25	21	15	21	18	19	20	19	20
By firearms	66	101	82	97	105	138	100	101	108	103	98	133
By cutting or piercing instruments	19	18	26	19	26	19	24	23	24	28	20	27
By jumping from high places	3	6	2	9	5	8	3	3	2	9	4	6
By crushing	1	3	4	4	8	2	3	1	2	3	4	2
Other suicides	5	5	1	4	4	3	2	4	3	2	3	7
Accidental or undefined (total)	1,496	1,401	1,440	1,688	1,625	1,481	1,714	1,568	1,856	1,561	1,505	1,489
Poisoning by food	6	18	15	23	28	22	30	22	14	17	15	24
Other acute poisonings	39	39	44	64	37	38	48	40	30	36	71	42
Conflagration	36	38	43	33	46	39	33	44	342	31	32	30
Burns (conflagration expected)	119	90	93	108	79	96	92	92	107	121	122	82
Absorption of deleterious gases (conflagration expected)	36	77	61	82	109	86	90	96	63	63	86	39
Accidental drowning	216	163	187	218	254	203	274	192	176	202	146	217
Traumatism by firearms	75	57	79	75	79	57	65	50	58	71	58	73
Traumatism by cutting or piercing instruments	4	5	4	4	6	1	4	7	7	6	8	14
Traumatism by fall	150	173	229	255	233	257	253	230	234	255	236	247
Traumatism in mines and quarries (total)	61	87	38	52	42	32	39	47	66	38	41	21
Traumatism in mines	60	85	37	52	39	31	37	47	65	36	40	20
Traumatism in quarries	1	2	1	0	3	1	2	0	1	2	1	1
Traumatism by machines	40	41	40	41	47	47	48	55	73	55	71	49
Traumatism by other crushing (total)	407	399	444	510	460	421	510	476	458	436	407	432
Railroad accidents and injuries	266	251	264	297	235	214	238	197	169	156	143	136
Street-car accidents and injuries	12	24	17	31	20	19	31	24	21	25	29	18
Automobile accidents and injuries	23	26	39	46	88	85	143	161	183	171	178	216
Injuries by other vehicles	81	83	101	115	107	88	83	81	73	62	49	48
Aeroplane accidents and injuries	0	0	0	0	0	0	0	0	0	1	2	3
Landslide, or other crushing	25	15	23	21	10	15	15	13	12	21	6	11
Injuries by animals	30	27	30	43	38	38	39	35	32	35	31	34
Excessive cold	24	21	16	28	18	17	22	22	14	9	5	10
Effects of heat	29	20	6	24	15	6	47	22	5	4	9	25
Lightning	14	12	17	20	23	13	15	14	10	12	15	8
Electricity (lightning excepted)	11	18	9	12	19	14	12	19	21	15	21	15
Fractures (cause not specified)	54	18	2	15	4	5	5	2	0	1	4	4
Starvation	2	2	2	0	1	2	1	1	3	0	1	0
Other external violence	143	96	81	81	87	87	87	102	143	154	126	123
Homicide (total)	68	82	60	66	99	76	75	75	68	76	74	106
By firearms	33	46	33	45	67	42	50	35	47	43	44	73
By cutting or piercing instruments	11	5	9	5	7	4	6	16	5	12	4	10
By other means	24	31	18	16	25	30	19	24	16	21	26	23

*The above figures taken from the Mortality Statistics, Bureau of the Census.

TABLE NO. X

DEATHS AND DEATH RATES FROM TUBERCULOSIS IN MINNESOTA AND MORBIDITY REPORTS COVERING A PERIOD OF 22 YEARS, 1900 TO 1921 INCLUSIVE

Year	*Population	Deaths from Tuberculosis, All Forms	Rate	Pulmonary Tuberculosis	Rate	Other Forms Tuberculosis	Cases Reported
			(Per 100,000 Population)				
1900	1,751,394	1,864	105.8	.....	.....	...	.....
1901	1,783,825	1,756	98.	.....	.....	...	.....
1902	1,816,256	1,784	98.	.....	.....	...	.....
1903	1,848,687	1,932	104.5	.....	.....	...	.....
1904	1,881,118	2,143	113.9	.....	.....	...	.....
1905	1,913,549	2,009	104.98	.....	.....	...	.....
1906	1,945,980	2,042	104.9	.....	.....	...	.....
1907	1,978,411	2,039	103.	.....	.....	...	.....
1908	2,010,842	2,161	107.	.....	.....	...	.....
1909	2,043,273	2,306	112.8	1,894	92.6	412	.....
1910	2,082,550	2,270	109.	1,306	86.7	464	682
1911	2,115,392	2,522	119.	1,992	94.	530	731
1912	2,148,235	2,330	108.5	1,857	86.	473	802
1913	2,181,077	2,342	107.	1,836	84.	506	2,518
1914	2,213,919	2,380	107.5	1,921	86.7	459	4,259
1915	2,246,761	2,281	101.5	1,818	80.9	463	4,624
1916	2,279,803	2,382	105.	1,927	84.9	455	5,280
1917	2,312,445	2,354	101.7	1,944	84.1	410	5,086
1918	2,345,287	2,543	108.	2,129	90.7	414	4,891
1919	2,378,129	2,244	94.	1,861	78.	383	†5,997
1920	2,387,125	2,157	90.	1,856	77.75	301	4,841
1921	2,418,267	1,880	77.74	1,544	63.84	336	5,200

*Estimated, excepted for years 1900, 1910 and 1920 (United States census).

†The total of 5,997 morbidity cases for 1919 includes 855 cases among men rejected by the Draft Board.

TABLE NO. XI.

DEATH FROM TUBERCULOSIS, 1917 TO 1921, INCLUSIVE

	Pulmonary Tuberculosis					Other Forms Tuberculosis				
County—	1917	1918	1919	1920	1921	1917	1918	1919	1920	1921
Aitkin	5	10	8	9	4	2	1	2	3	1
Anoka	11	20	20	13	24	4	2	0	6	2
Becker	23	22	17	25	21	3	2	2	2	3
Beltrami	44	49	35	27	19	5	7	4	5	7
Benton	5	5	3	5	3	0	0	0	1	3
Big Stone	3	1	1	4	5	1	2	2	0	2
Blue Earth	11	16	14	15	13	6	5	2	3	2
Brown	6	11	8	6	9	7	5	8	1	2
Carlton	16	14	16	18	9	6	1	3	1	3
Carver	8	8	11	5	3	3	3	4	1	0
Cass	55	61	52	56	48	1	2	0	1	2
Chippewa	20	25	30	23	15	2	8	1	3	2
Chisago	9	10	10	5	9	2	0	2	0	1
Clay	9	8	11	3	6	2	4	3	2	3
Clearwater	6	6	4	4	8	0	0	0	0	0
Cook	2	0	0	0	0	0	0	0	0	0
Cottonwood	5	2	7	8	5	1	1	3	1	1
Crow Wing	13	22	12	13	21	4	2	6	3	5
Dakota	22	23	21	8	15	5	4	7	3	3
Dodge	5	7	1	3	3	0	0	0	1	0
Douglas	11	11	9	8	9	2	2	6	4	1
Faribault	8	7	11	6	7	1	4	1	2	3
Fillmore	11	16	17	14	7	4	3	1	0	3
Freeborn	6	12	6	12	7	1	2	3	2	3
Goodhue	24	36	40	31	30	0	5	4	3	2
Grant	5	2	9	3	1	1	1	1	0	1

TABLE NO. XI—(Continued)

DEATH FROM TUBERCULOSIS, 1917 TO 1921, INCLUSIVE

County—	Pulmonary Tuberculosis 1917	1918	1919	1920	1921	Other Forms Tuberculosis 1917	1918	1919	1920	1921
Hennepin, Ex. of	20	44	35	43	66	2	1	6	3	2
Minneapolis	430	410	383	364	281	73	69	82	53	58
Houston	10	11	10	10	4	3	1	3	2	0
Hubbard	3	5	1	3	6	0	1	0	0	0
Isanti	10	13	9	8	4	1	0	3	0	1
Itasca	13	7	7	9	9	1	1	0	4	5
Jackson	3	6	5	3	2	1	0	3	2	0
Kanabec	2	6	2	4	5	0	1	0	0	1
Kandiyohi	9	17	15	14	10	7	5	2	3	2
Kittson	2	10	4	2	0	1	1	3	3	2
Koochiching	10	7	5	7	3	0	3	0	0	1
Lac qui Parle	3	5	6	6	4	0	2	1	0	0
Lake	3	8	6	2	3	5	4	3	5	3
Le Sueur	12	9	7	12	4	2	3	3	1	0
Lincoln	3	3	5	1	0	0	0	2	0	3
Lyon	7	3	6	5	4	0	1	1	3	1
McLeod	6	5	7	8	11	3	3	1	0	3
Mahnomen	7	8	8	10	4	0	1	0	3	0
Marshall	18	12	11	10	5	3	2	3	1	4
Martin	9	8	11	11	9	0	1	1	1	1
Meeker	12	9	12	16	6	2	1	0	5	3
Mille Lacs	8	5	11	5	9	2	3	7	2	3
Morrison	10	11	12	18	9	4	3	2	4	1
Mower	11	13	7	5	12	0	3	2	2	4
Murray	4	3	3	5	1	0	0	1	0	1
Nicollet	38	43	42	41	45	5	2	3	4	1
Nobles	14	13	10	16	6	1	1	2	0	2
Norman	14	13	10	11	6	3	1	3	3	2
Olmstead	40	33	37	41	35	24	24	23	13	19
Otter Tail	69	78	74	73	63	7	7	6	6	6
Pennington	14	10	17	22	20	0	1	2	1	1
Pine	26	26	19	24	14	3	3	2	0	1
Pipestone	3	2	3	2	5	0	1	1	1	2
Polk	45	34	37	36	34	9	17	4	3	5
Pope	13	7	10	10	13	1	4	1	1	2
Ramsey, Ex. of	5	4	4	4	3	0	1	2	0	0
St. Paul	273	357	246	223	187	61	63	42	43	48
Red Lake	1	3	3	3	1	1	0	0	2	0
Redwood	9	11	6	4	6	0	2	0	0	2
Renville	5	8	10	9	5	3	2	2	0	2
Rice	26	25	27	23	21	4	3	2	4	5
Rock	1	5	2	1	5	2	1	2	5	1
Roseau	7	8	7	8	2	5	5	3	2	2
St. Louis, Ex. of	126	132	120	149	96	23	28	18	18	18
Duluth	75	86	57	69	48	36	30	22	14	28
Scott	7	9	10	13	7	3	3	5	2	2
Sherburne	4	3	1	8	1	1	0	1	1	0
Sibley	1	7	6	6	8	1	2	1	2	0
Stearns	35	29	21	33	14	12	16	10	5	8
Steele	5	11	5	2	4	2	0	2	0	2
Stevens	5	4	5	2	5	1	1	0	0	0
Swift	2	5	9	8	6	0	3	2	2	2
Todd	13	11	5	4	2	4	2	3	2	1
Traverse	3	4	4	1	2	2	0	1	0	0
Wabasha	19	17	12	20	18	3	5	2	2	0
Wadena	7	16	12	12	17	2	1	1	1	1
Waseca	7	6	3	3	6	0	0	1	1	0
Washington	13	16	12	13	16	0	1	0	4	4
Watonwan	2	7	5	6	12	4	2	2	2	2
Wilkin	1	2	3	0	2	2	0	0	2	1
Winona	34	25	25	18	13	5	4	5	8	5
Wright	9	15	14	18	15	5	1	4	2	6
Yellow Medicine	5	2	7	5	3	2	1	1	0	1
Grand total	1,944	2,129	1,861	1,846	1,538	410	414	375	301	336

TABLE NO. XII

Minnesota State Board of Health, Division of Vital Statistics
Gerda C. Pierson, Director

DEATHS FROM TUBERCULOSIS, CITIES OF 5,000 AND OVER, FIVE YEARS (1917-1921)

City—	Pop., U. S. Census, 1920	1917			1918			1919			1920			1921		
		*P.	†N.	‡T.	P.	N.	T.	P.	N.	T.	P.	N.	T.	P.	N.	T.
Cloquet	5,127	5	0	5	3	0	3	1	1	2	2	1	3	1	0	1
Little Falls	5,500	4	1	5	3	0	3	1	0	1	5	5	10	4	0	4
Moorhead	5,720	4	2	6	6	0	6	7	1	8	1	0	1	4	1	5
Willmar	5,892	2	1	3	4	3	7	5	1	6	4	3	7	2	1	3
New Ulm	6,745	2	7	9	5	3	8	6	6	12	2	1	3	7	2	9
Crookston	6,825	6	5	11	6	9	15	4	2	6	4	4	8	9	4	13
South St. Paul	6,860	5	0	5	7	2	9	4	1	5	3	1	4	3	2	5
Bemidji	7,086	8	0	8	8	3	11	4	0	4	5	2	7	1	2	3
Eveleth	7,205	2	1	3	5	1	6	0	1	1	2	4	6	3	3	6
Owatonna	7,252	2	1	3	4	0	4	3	0	3	1	0	1	1	1	2
Fergus Falls	7,381	40	4	44	43	5	48	43	3	46	35	2	37	37	2	39
Stillwater	7,735	3	0	3	6	1	7	4	0	4	4	2	6	5	1	6
Albert Lea	8,056	3	1	4	5	1	6	2	1	3	4	1	5	4	2	6
Red Wing	8,627	5	0	5	5	2	7	11	3	14	6	2	8	6	2	8
Chisholm	9,039	2	2	4	7	1	8	3	0	3	5	0	5	2	0	2
Brainerd	9,591	3	1	4	8	1	9	2	4	6	5	2	7	6	4	10
Austin	10,118	2	0	2	4	0	4	2	1	3	5	0	5	4	4	8
Faribault	11,089	16	1	17	23	2	25	18	1	19	21	2	23	16	3	19
Mankato	12,469	5	5	10	10	3	13	10	0	10	7	2	9	9	2	11
Rochester	13,722	35	22	57	30	20	50	33	21	54	33	14	47	33	18	51
Virginia	14,022	12	0	12	8	5	13	7	2	9	8	1	9	3	1	4
Hibbing	15,089	4	2	6	6	3	9	6	1	7	4	4	8	8	4	12
St. Cloud	15,873	15	7	22	8	5	13	8	5	13	14	2	16	2	4	6
Winona	19,143	30	2	32	20	2	22	18	5	23	14	8	22	12	4	16
Duluth	98,917	75	36	111	86	30	116	57	22	79	69	14	83	48	28	76
St. Paul	234,698	273	61	334	357	63	420	246	42	288	223	43	266	187	48	235
Minneapolis	380,582	430	73	503	410	69	479	383	82	465	364	53	417	281	58	339
Totals	940,363	993	235	1,228	1,087	234	1,321	888	206	1,094	851	173	1,024	698	201	899

*Pulmonary tuberculosis
†Other forms of tuberculosis.
‡Total deaths all forms.

	1917	1918	1919	1920	1921
Total tuberculosis deaths, entire state	2,354	2,543	2,244	2,157	1,880

TABLE NO. XIII

DEATHS FROM TYPHOID FEVER IN MINNESOTA DURING A PERIOD OF 12 YEARS—1910 TO 1921 INCLUSIVE

County—	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Aitkin	3	1	4	3	3	0	0	0	0	0	0	0
Anoka	6	6	7	2	0	3	1	0	0	1	0	1
Becker	3	7	2	0	1	3	2	0	0	0	1	2
Beltrami (exception of)	6	2	4	1	4	0	2	2	3	1	1	2
Bemidji	8	4	7	4	1	1	3	2	0	3	2	3
Benton (exception of)	1	1	2	0	1	0	0	0	0	0	0	1
St. Cloud	0	0	0	0	0	0	0	0	0	0	0	1
Big Stone	4	3	3	1	1	1	1	2	2	0	1	1
Blue Earth (exception of)	0	1	1	2	0	0	0	0	1	0	0	1
Mankato	1	4	1	2	1	1	0	2	0	1	1	2
Brown (exception of)	1	0	0	0	1	0	0	0	0	0	2	1
New Ulm	0	2	0	0	3	1	1	2	0	0	1	0
Carlton (exception of)	1	0	2	0	3	0	2	0	0	0	1	0
Cloquet	6	1	1	1	0	0	1	1	0	1	0	0
Carver	2	2	2	1	2	0	1	0	1	0	0	0
Cass	3	2	0	1	0	1	1	0	0	0	1	0
Chippewa	1	2	2	2	1	1	0	0	0	1	0	0
Chisago	3	2	1	1	0	1	1	0	0	0	1	0
Clay	7	9	3	5	4	2	2	0	3	0	2	1
Clearwater	4	1	2	1	0	0	1	2	0	0	0	0
Cook	1	0	0	0	0	0	0	0	0	0	0	0
Cottonwood	2	0	1	1	6	0	1	0	1	0	1	2
Crow Wing (exception of)	2	0	0	1	3	0	1	1	1	0	2	1
Brainerd	20	5	4	3	3	2	1	1	0	2	1	1
Dakota	0	0	1	1	2	0	0	0	0	0	1	1
Dodge	0	1	0	0	0	1	0	2	0	1	0	0
Douglas	2	0	1	1	2	3	0	1	0	0	0	0
Faribault	0	1	1	0	2	0	1	1	0	0	1	0
Fillmore	4	0	0	1	2	2	0	0	0	0	0	3
Freeborn (exception of)	1	2	0	0	0	1	1	0	0	0	0	0
Albert Lea	0	1	0	1	3	2	0	0	0	0	0	0
Goodhue (exception of)	1	1	1	0	1	2	0	1	3	0	0	0
Red Wing	3	3	2	1	2	3	1	0	0	1	1	1
Grant	2	2	1	0	1	0	0	0	0	0	1	0
Hennepin (exception of)	2	3	5	2	1	0	0	1	1	0	0	0
Minneapolis	185	42	39	41	42	26	21	24	32	13	10	5
Houston	0	0	0	0	0	0	0	0	0	0	0	1
Hubbard	3	0	1	2	0	2	1	1	0	0	1	2
Isanti	1	1	0	0	0	1	0	2	0	0	1	0
Itasca	15	5	3	2	0	1	1	0	0	1	1	1
Jackson	0	0	2	0	1	1	0	0	0	0	0	0
Kanabec	3	1	0	0	0	0	0	0	0	0	0	0

TABLE NO. XIII—Continued

County—	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Kandiyohi	1	1	0	1	1	0	0	0	0	2	0	1
Kittson	2	1	1	4	2	0	1	0	0	0	0	1
Koochiching	4	7	1	5	4	5	1	1	0	1	1	1
Lac qui Parle	2	4	0	2	0	0	2	1	0	0	0	1
Lake	14	7	6	3	0	0	1	0	0	0	0	0
Le Sueur	2	0	0	2	0	1	0	0	0	0	1	0
Lincoln	1	1	3	1	0	0	0	0	0	0	0	0
Lyon	4	7	3	1	1	0	0	0	1	0	0	1
McLeod	4	1	0	0	1	0	0	0	0	0	0	0
Mahnomen	1	1	2	0	0	0	0	0	0	0	0	0
Marshall	11	4	3	5	5	1	3	1	0	0	1	4
Martin	2	1	0	0	0	0	1	0	0	2	0	1
Meeker	0	3	0	0	0	1	0	1	0	0	0	0
Mille Lacs	1	1	1	0	0	1	0	0	0	0	0	0
Morrison (exception of)	2	0	2	1	0	1	0	0	1	1	0	0
Little Falls	4	5	2	4	1	1	2	0	0	0	0	2
Mower (exception of)	1	2	2	0	0	0	0	0	2	0	0	0
Austin	3	1	1	1	2	1	1	0	0	0	0	0
Murray	0	4	1	3	1	0	0	0	1	0	1	0
Nicollet (exception of)	1	2	2	0	0	0	1	1	1	0	1	1
St. Peter	17	0	0	0	0	0	0	0	0	4	0	0
Nobles	1	1	1	1	1	0	0	0	0	1	0	1
Norman	3	2	0	2	2	0	1	0	0	0	1	1
Olmstead (exception of)	8	0	2	1	0	1	0	1	2	0	0	0
Rochester	8	1	0	1	1	0	3	0	0	2	0	1
Otter Tail (exception of)	7	1	2	1	2	2	2	2	3	2	1	0
Fergus Falls	16	7	7	7	3	3	1	2	0	3	0	1
Pennington	3	2	0	1	1	1	1	3	1	0	1	3
Pine	4	2	0	1	0	0	0	0	3	1	0	0
Pipestone	0	0	0	1	0	0	0	0	0	1	1	1
Polk (exception of)	2	4	1	3	3	1	2	0	1	1	0	0
Crookston	8	3	2	5	6	1	0	1	0	1	0	0
Pope	1	0	2	1	2	1	0	2	0	0	0	0
Ramsey (exception of)	0	2	0	0	0	0	0	0	0	0	0	1
St. Paul	43	24	25	20	26	18	13	6	8	8	5	18
Red Lake	7	3	1	1	2	2	0	1	0	0	0	0
Redwood	2	0	1	0	0	1	0	1	1	0	1	0
Renville	2	1	2	0	0	0	0	0	0	0	0	0
Rice (exception of)	0	2	1	2	1	0	0	0	0	2	1	0
Faribault	3	1	1	1	7	11	1	2	0	0	0	1
Rock	0	2	0	0	2	1	0	0	0	0	0	0
Roseau	4	2	0	5	0	2	3	3	1	2	0	0
St. Louis (exception of)	19	6	3	9	6	1	13	1	2	2	1	2

TABLE NO. XIII—Continued

County—	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Duluth	60	18	19	21	17	10	8	6	4	2	6	3
Hibbing	15	4	2	1	2	0	2	1	0	2	1	1
Virginia	25	3	1	8	4	5	4	1	0	0	1	0
Eveleth	9	1	0	1	1	1	3	0	0	0	1	0
Chisholm	0	0	0	1	2	0	0	3	0	0	1	0
Scott	1	0	1	0	1	1	0	0	0	1	0	1
Sherburne	3	0	3	0	0	0	0	0	0	0	0	0
Sibley	1	0	0	0	1	0	1	0	0	0	0	0
Stearns (exception of)	7	2	2	0	0	2	2	1	2	1	1	1
St. Cloud	4	2	0	0	0	3	1	1	0	0	1	2
Steele (exception of)	0	0	0	0	0	0	0	1	0	2	0	0
Owatonna	1	0	1	1	1	0	0	2	0	1	0	0
Stevens	3	0	0	1	1	0	0	0	0	0	0	0
Swift	1	2	2	1	5	0	1	0	0	2	0	0
Todd	5	3	0	2	1	1	0	0	0	1	0	0
Traverse	4	0	0	0	1	0	0	0	0	0	0	2
Wabasha	2	1	1	2	0	1	2	0	1	1	1	0
Wadena	1	1	0	1	0	0	0	0	1	1	2	1
Waseca	2	1	1	0	0	0	0	0	1	0	0	0
Washington (exception of)	1	1	1	0	0	0	1	1	0	0	1	0
Stillwater	6	3	2	4	0	3	0	0	0	1	0	0
Watonwan	1	2	0	4	0	0	0	0	0	0	0	0
Wilkin	9	6	0	3	1	2	0	1	1	1	2	0
Winona (exception of)	0	2	0	0	3	0	0	1	1	0	0	0
Winona (city)	4	1	6	5	0	4	1	1	0	0	0	0
Wright	2	2	3	0	0	1	1	0	0	0	1	1
Yellow Medicine	1	1	1	0	4	2	0	0	0	0	0	1
Total	683	293	233	236	225	156	128	98	87	78	71	90

TABLE NO. XIV

DEATHS FROM TYPHOID FEVER IN MINNESOTA DURING A PERIOD OF 22 YEARS (1900 TO 1921, INCLUSIVE)

Year	Minneapolis	St. Paul	Duluth	State at Large (Exclusive of Mpls. St. Paul and Duluth)	Total
1900	79	39	62	391	571
1901	132	24	35	275	466
1902	65	24	32	249	370
1903	101	18	40	217	376
1904	103	27	39	209	378
1905	55	20	32	187	294
1906	87	41	32	297	457
1907	70	36	29	215	350
1908	53	27	41	249	370
1909	66	39	38	250	393
1910	185	43	60	400	688
1911	42	24	18	209	293
1912	39	25	19	150	233
1913	41	20	21	154	236
1914	42	26	17	140	225
1915	26	18	10	102	156
1916	21	13	8	87	129
1917	24	6	6	63	99
1918	32	8	4	43	87
1919	13	8	2	55	78
1920	10	5	6	50	71
1921	5	18	3	64	90

TABLE NO. XV

YEAR 1920

LIVING BIRTHS, STILLBIRTHS, INFANT DEATHS, INFANT MORTALITY RATE (PER 1,000 LIVING BIRTHS) AND PUERPERAL DEATHS IN REGISTRATION DISTRICTS IN MINNESOTA, WITH A POPULATION OF FIVE THOUSAND AND UPWARDS

Registration District	U. S. Census, Population 1920	Living Births	Deaths Under 1 Week	Deaths, 1 Week to 1 Month	Deaths, 1 Month to 1 Year	Total Deaths Under 1 Year	Infant Mortality Per 1,000 Living Births	Still-Births	Puerperal Deaths
Minneapolis	380,582	9,182	295	87	219	596	64.9	325	64
St. Paul................	234,698	5,174	178	61	135	375	72.5	177	37
Duluth	98,917	2,446	101	22	60	182	74.4	101	20
Austin	10,118	234	13	2	10	25	106.8	12	4
Faribault	11,089	244	12	2	13	28	110.7	15	3
Hibbing	15,089	446	14	5	12	31	69.5	13	3
Mankato	12,469	304	6	4	6	16	52.6	9	5
Rochester	13,722	334	11	6	15	32	95.8	13	1
St. Cloud...............	15,873	490	19	7	16	42	85.7	19	6
Virginia	14,022	373	14	3	16	33	88.5	10	4
Winona	19,143	486	7	3	9	19	39.1	17	2
Albert Lea..............	8,056	204	10	4	6	20	98.	3	2
Bemidji	7,086	265	12	2	9	23	86.8	15	7
Brainerd	9,591	301	11	6	18	34	113.	17	2
Chisholm	9,039	290	10	2	8	20	69.	4	4
Cloquet	5,127	144	3	3	5	11	76.4	3	0
Crookston	6,825	264	12	0	7	19	71.9	13	4
Eveleth	7,205	208	9	2	14	25	120.2	5	2
Fergus Falls............	7,581	175	3	1	5	9	51.4	3	3
Little Falls............	5,500	189	6	1	5	12	63.5	3	1
Moorhead	5,720	106	1	2	2	5	47.2	6	0
New Ulm.................	6,745	154	3	1	2	6	39.	3	1
Owatonna	7,252	142	3	0	8	11	77.5	2	0
Red Wing................	8,627	195	7	2	5	15	76.8	10	1
South St. Paul..........	6,860	137	4	2	12	18	131.4	6	0
Stillwater	7,735	151	4	1	4	9	59.6	9	2
Willmar	5,892	182	7	0	6	13	71.4	4	1

TABLE NO. XVI

YEAR 1921

LIVING BIRTHS, STILLBIRTHS, INFANT DEATHS, INFANT MORTALITY RATE (PER 1,000 LIVING BIRTHS) AND PUERPERAL DEATHS IN REGISTRATION DISTRICTS IN MINNESOTA, WITH A POPULATION OF FIVE THOUSAND AND UPWARDS

Registration District	U. S. Census, Population 1920	Living Births	Deaths Under 1 Week	Deaths, 1 Week to 1 Month	Deaths, 1 Month to 1 Year	Total Deaths Under 1 Year	Infant Mortality Per 1,000 Living Births	Still-Births	Puerperal Deaths
Minneapolis	380,582	9,426	284	65	173	522	55.	346	70
St. Paul................	234,698	5,608	167	35	102	304	54	203	37
Duluth	98,917	2,419	88	17	51	156	64.	68	19
Austin	10,118	256	4	2	9	15	58.5	8	1
Faribault	11,089	273	8	3	5	16	58.6	9	4
Hibbing	15,089	479	29	1	2	32	68.8	16	4
Mankato	12,469	327	9	3	11	23	70.	12	4
Rochester	13,722	387	22	5	10	37	95.6	4	6
St. Cloud...............	15,873	513	21	3	16	40	78.	16	8
Virginia	14,022	330	13	4	10	27	82.	11	4
Winona	19,143	420	16	5	11	32	76.	15	2
Albert Lea..............	8,056	241	14	1	4	19	78.8	7	2
Bemidji	7,086	280	19	1	6	26	92.8	8	1
Brainerd	9,591	359	18	1	11	30	83.5	19	1
Chisholm	9,039	297	3	1	8	12	40.	5	2
Cloquet	5,127	141	6	4	2	12	85.	7	1
Crookston	6,825	273	8	2	1	11	40.	8	2
Eveleth	7,205	218	6	1	4	11	50.	11	2
Fergus Falls............	7,581	195	9	2	3	14	72.	6	3
Little Falls............	5,500	159	5	0	9	14	88.	5	3
Moorhead	5,720	97	3	0	5	8	82.	7	0
New Ulm.................	6,745	176	3	1	4	8	45.	3	1
Owatonna	7,252	143	3	0	2	5	35.	2	0
Red Wing................	8,627	239	3	1	4	8	33.	12	0
South St. Paul..........	6,860	177	5	1	5	11	62.	5	0
Stillwater	7,735	150	5	3	3	11	73.	3	0
Willmar	5,892	169	10	2	3	15	88.7	8	1

TABLE NO. XVII

DEATHS AMONG CHILDREN UNDER FIVE YEARS OF AGE AND PUERPERAL DEATHS IN MINNESOTA DURING THE YEARS 1920 AND 1921 (STILLBIRTHS SEPARATELY LISTED)

	Under 1 Week		Under 1 Month		1 Month to 1 Year		1 to 2 Years		2 to 3 Years		3 to 4 Years		4 to 5 Years		Still-Births		Deaths, Puerperal	
County—	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Aitkin	9	7	6	4	7	5	4	6	4	0	2	0	1	1	17	19	1	1
Anoka	4	9	4	4	12	6	4	1	1	1	1	0	1	2	6	6	2	0
Becker	23	11	9	9	28	16	11	8	3	6	0	2	3	1	20	9	1	2
Beltrami (Ex. of)	18	10	2	5	15	8	5	3	2	0	2	1	6	0	17	16	2	2
Bemidji	12	19	2	1	9	6	0	4	2	1	0	0	1	0	15	8	7	1
Benton (Ex. of)	17	6	7	4	15	4	0	3	1	1	1	2	0	0	3	12	2	1
St. Cloud	0	2	0	1	2	0	1	1	0	0	0	0	0	0	1	2	0	0
Big Stone	10	12	2	4	4	4	4	1	2	1	0	1	1	1	9	11	1	1
Blue Earth (Ex. of)	12	10	6	2	6	11	2	2	6	0	3	1	0	0	4	9	2	0
Mankato	6	9	4	3	6	11	1	2	1	2	2	3	1	0	9	12	5	4
Brown (Ex. of)	5	13	4	3	7	2	0	0	3	1	2	1	1	0	6	5	2	1
New Ulm	3	4	1	1	2	4	3	2	0	1	0	0	0	0	3	3	1	1
Carlton (Ex. of)	7	10	2	4	12	11	3	2	4	1	2	0	2	3	12	13	2	1
Cloquet	3	6	3	4	5	2	4	0	3	0	0	0	0	0	3	7	0	1
Carver	9	5	4	1	6	4	0	2	1	1	0	0	0	0	9	12	1	1
Cass	21	19	5	1	15	14	4	4	1	1	0	1	0	0	4	15	4	1
Chippewa	8	10	10	4	14	9	4	2	4	0	1	0	1	0	14	10	2	3
Chisago	2	6	3	2	4	9	4	2	1	0	2	0	1	0	9	12	0	1
Clay (Ex. of)	12	10	4	3	2	10	6	7	2	1	2	1	0	1	6	9	0	4
Moorhead	1	3	2	0	5	5	4	1	1	1	1	0	1	0	6	7	0	0
Clearwater	3	7	2	4	2	4	0	1	1	1	3	2	0	1	4	5	0	0
Cook	1	1	0	0	0	0	0	0	0	1	0	0	2	1	1	1	0	0
Cottonwood	12	2	2	3	9	5	5	0	6	0	1	1	0	0	7	8	1	1
Crow Wing (Ex. of)	16	8	9	4	3	9	5	2	1	4	4	1	1	2	7	7	2	1
Brainerd	11	18	6	1	13	11	4	0	2	3	1	1	0	1	17	19	2	1
Dakota (Ex. of)	10	12	4	3	16	10	1	4	1	6	1	2	1	1	17	11	1	4
South St. Paul	4	5	2	1	12	5	2	1	3	1	0	1	2	1	6	5	0	0
Dodge	6	5	0	2	4	6	3	2	1	4	1	0	1	1	6	7	2	0
Douglas	8	16	9	2	11	2	8	2	3	1	1	0	2	1	15	5	0	1
Faribault	16	17	4	7	8	5	3	1	3	2	2	2	1	1	17	12	3	2
Fillmore	17	16	5	5	11	12	6	3	3	1	2	2	1	0	14	17	2	2
Freeborn (Ex. of)	7	7	3	2	9	7	1	2	1	2	0	1	0	0	8	11	3	1
Albert Lea	10	14	4	1	6	4	3	3	1	1	1	1	1	1	3	7	2	2
Goodhue (Ex. of)	10	18	5	5	5	6	5	0	1	1	3	0	1	0	12	13	2	1
Red Wing	7	3	2	1	6	4	2	0	0	0	2	1	0	0	10	12	1	0
Grant	8	3	2	1	3	1	3	1	1	0	1	0	0	0	7	6	1	1
Hennepin (Ex. of)	15	7	5	4	9	11	6	3	3	0	1	2	0	4	9	10	4	3
Minneapolis	295	284	87	65	221	173	101	67	54	51	35	36	26	36	325	346	64	70

TABLE NO. XVII—Continued

	Under 1 Week		Under 1 Month		1 Month to 1 Year		1 to 2 Years		2 to 3 Years		3 to 4 Years		4 to 5 Years		Still-Births		Deaths, Puerperal	
County—	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Houston	13	6	1	3	4	8	2	3	1	0	1	1	0	0	13	6	1	1
Hubbard	6	10	1	1	9	3	2	3	1	1	2	1	1	0	4	7	2	0
Isanti	7	7	6	2	5	9	3	0	2	1	0	1	1	0	7	9	0	0
Itasca	15	21	7	8	22	25	11	7	5	1	2	5	2	2	16	24	8	6
Jackson	14	16	1	3	10	10	3	3	3	0	1	2	0	0	12	11	2	1
Kanabec	4	2	4	4	0	2	2	3	1	0	0	0	0	0	4	4	0	0
Kandiyohi (Ex. of)	5	9	1	5	5	1	5	3	1	1	0	1	1	2	16	7	2	2
Willmar	7	10	0	2	6	3	1	0	0	0	1	1	0	1	4	8	1	1
Kittson	9	10	4	5	8	10	4	2	1	0	1	0	2	0	6	11	1	0
Koochiching	9	15	2	4	6	9	2	4	5	3	2	1	1	3	5	14	2	4
Lac qui Parle	9	11	4	4	10	4	3	3	1	3	2	0	2	1	16	11	1	2
Lake	2	4	1	0	2	8	1	0	1	1	1	0	1	4	5	4	1	4
Le Sueur	6	7	2	4	11	8	3	2	0	5	1	0	1	0	13	8	3	1
Lincoln	4	10	3	2	4	7	2	2	0	1	0	1	0	1	3	6	1	1
Lyon	12	13	4	5	12	6	8	1	2	1	4	2	1	1	8	8	0	1
McLeod	13	14	5	3	4	13	4	1	1	2	1	3	1	0	9	3	3	1
Mahnomen	4	5	5	4	10	9	4	2	1	0	1	0	0	0	5	5	1	2
Marshall	9	8	5	5	16	10	7	2	1	2	1	1	2	2	9	11	3	3
Martin	14	23	2	6	8	10	2	0	4	5	5	2	1	2	8	16	6	1
Meeker	11	17	5	5	9	11	6	4	2	3	0	0	0	0	11	10	2	2
Mille Lacs	9	7	1	3	12	9	3	5	2	4	1	2	0	1	13	21	2	4
Morrison (Ex. of)	6	11	6	8	11	14	2	3	0	1	1	0	1	3	5	10	1	2
Little Falls	6	5	1	0	7	9	3	5	0	0	0	1	1	1	3	5	1	3
Mower (Ex. of)	14	6	5	1	5	7	2	1	3	1	3	0	0	1	7	8	0	0
Austin	13	4	2	2	10	9	3	4	0	3	0	1	0	1	12	8	4	1
Murray	9	11	1	4	6	7	3	4	0	2	2	2	1	1	8	8	3	2
Nicollet	9	4	6	3	2	2	2	2	0	6	0	1	0	1	3	5	1	0
Nobles	13	13	5	3	8	7	7	1	0	1	1	1	0	3	6	17	4	2
Norman	10	6	5	2	11	7	3	1	2	1	1	0	0	0	4	6	2	0
Olmsted (Ex. of)	14	5	3	3	6	5	4	3	1	0	2	1	1	1	8	7	1	3
Rochester	11	22	6	5	14	10	9	5	5	3	3	6	1	2	13	4	1	6
Otter Tail (Ex. of)	25	32	15	14	27	16	11	6	11	5	3	4	2	1	19	27	7	5
Fergus Falls	3	9	1	2	5	3	3	0	1	1	1	1	1	0	3	6	3	3
Pennington	11	9	3	5	8	8	2	1	2	1	1	0	0	0	8	6	4	2
Pine	15	12	6	4	4	10	3	4	3	1	4	2	3	1	12	11	2	2
Pipestone	13	10	2	3	3	8	2	2	0	0	2	1	2	2	12	15	0	3
Polk (Ex. of)	17	22	4	8	21	17	8	5	4	2	2	2	1	1	20	13	7	1
Crookston	12	8	0	2	7	1	3	3	2	2	0	0	0	3	13	8	4	2
Pope	10	10	3	2	9	7	2	1	0	0	1	1	0	0	5	6	1	1
Ramsey (Ex. of)	3	2	2	0	5	3	0	1	0	0	1	2	1	0	2	11	0	0
St. Paul	178	167	61	35	135	102	62	27	33	27	29	23	11	15	177	203	37	37

TABLE NO. XVII—Continued

County—	Under 1 Week		Under 1 Month		1 Month to 1 Year		1 to 2 Years		2 to 3 Years		3 to 4 Years		4 to 5 Years		Still-Births		Deaths, Puerperal	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Red Lake	10	5	8	2	7	4	3	3	1	0	2	0	0	0	3	4	1	0
Redwood	14	16	6	1	9	11	4	2	0	1	1	1	0	1	13	7	2	0
Renville	10	18	7	4	11	11	1	2	2	0	0	1	0	0	6	15	2	3
Rice (Ex. of)	6	2	5	4	5	6	2	2	0	0	0	0	1	1	11	7	4	0
Faribault	12	8	2	3	12	5	7	0	2	4	4	1	4	2	15	9	3	4
Rock	6	5	1	3	5	8	3	2	3	1	1	0	1	1	9	7	1	2
Roseau	10	9	2	4	10	2	2	1	0	0	0	0	0	0	6	10	1	3
St. Louis (Ex. of)	37	34	12	22	75	34	29	15	13	6	12	9	6	6	47	48	16	5
Chisholm	10	3	2	1	8	8	3	2	3	2	3	0	0	0	4	5	4	2
Duluth	101	88	22	17	59	51	25	24	11	11	15	12	11	9	101	68	20	19
Eveleth	9	6	2	1	15	4	5	1	2	0	3	1	2	1	5	11	2	2
Hibbing	14	29	5	1	12	2	5	4	4	1	2	0	1	2	13	16	3	4
Virginia	14	13	3	4	15	10	8	3	3	0	0	1	1	3	10	11	4	4
Scott	6	10	1	1	6	11	1	8	1	5	0	1	0	1	10	6	0	1
Sherburne (Ex. of)	5	7	2	1	1	2	2	0	0	0	1	0	1	0	6	8	1	0
St. Cloud	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sibley	14	7	4	3	7	8	1	1	1	2	0	0	1	0	6	11	0	4
Stearns (Ex. of)	32	25	12	9	30	30	10	7	7	5	2	9	3	3	32	26	3	3
St. Cloud	19	19	7	2	14	16	7	7	3	1	1	0	5	4	18	14	6	8
Steele (Ex. of)	4	5	2	1	4	3	3	3	0	0	1	2	0	1	5	2	2	0
Owatonna	3	3	0	0	8	2	3	5	0	1	1	1	0	2	2	2	0	0
Stevens	11	12	4	1	6	1	0	0	0	0	1	0	1	2	6	5	0	0
Swift	18	15	3	6	12	9	6	2	1	1	3	1	1	0	10	12	2	5
Todd	17	7	3	5	9	12	4	2	1	3	2	0	3	0	18	17	4	1
Traverse	2	5	2	2	7	6	1	2	2	1	1	0	0	0	2	4	1	0
Wabasha	11	11	6	3	10	11	4	3	0	1	1	0	0	3	9	6	1	1
Wadena	10	7	6	8	8	8	2	1	0	1	0	3	0	3	10	7	2	3
Waseca	4	8	1	5	10	8	10	5	2	1	2	0	0	2	5	6	1	0
Washington (Ex. of)	9	7	3	4	6	11	0	2	1	1	0	0	3	0	4	8	0	2
Stillwater	4	5	1	3	4	3	0	1	0	0	0	1	1	0	9	3	2	0
Watonwan	8	13	2	7	9	8	1	2	0	0	0	1	1	0	7	5	2	1
Wilkin	8	7	0	3	10	10	3	0	2	0	3	0	0	0	6	5	1	1
Winona (Ex. of)	8	12	1	1	6	6	2	2	1	1	1	0	1	1	12	2	0	1
Winona City	7	15	3	5	9	11	7	4	1	4	3	3	3	1	17	15	2	2
Wright	16	16	8	5	15	8	9	6	0	2	4	1	1	1	13	18	1	3
Yellow Medicine	11	8	5	2	8	5	1	1	2	1	1	0	0	1	13	10	4	0
Total	1,682	1,677	585	499	1,443	1,190	608	399	298	246	235	188	154	168	1,648	1,697	348	312

TABLE NO. XVIII

ILLEGITIMACY RATE PER THOUSAND LIVING BIRTHS, 1913 TO 1921, INCLUSIVE, FOR THE POLITICAL SUBDIVISIONS INDICATED.

Year.	State			Minneapolis			St. Paul			Duluth		
	Living Births.	Illegitimate Births.	Rate.	Living Births.	Illegitimate Births.	Rate.	Living Births.	Illegitimate Births.	Rate.	Living Births.	Illegitimate Births.	Rate.
1913	50,147	946	18.8	7,133	292	40.9	4,773	221	46.3	1,978	67	33.9
1914	51,945	1,089	20.9	8,192	389	46.4	5,191	245	47.2	2,161	82	37.9
1915	55,233	1,117	20.3	8,529	365	42.5	5,291	272	51.4	2,072	58	28.
1916	55,680	1,036	18.9	8,794	351	40.5	5,245	234	44.4	2,175	63	28.9
1917	54,928	978	16.5	8,670	350	40.4	5,148	258	50.2	2,258	56	24.8
1918	55,873	1,039	18.59	8,700	352	40.45	5,156	222	43.05	2,422	67	27.66
1919	51,691	910	17.5	8,121	284	34.97	4,863	199	40.9	2,311	56	24.23
1920	55,864	1,000	17.09	9,182	371	40.4	5,174	221	42.7	2,446	65	26.57
1921	58,042	1,190	20.5	9,438	446	47.25	5,609	232	41.36	2,427	59	24.3

TABLE NO. XIX

TABLE SHOWING DEATHS FOR 1914 TO 1921 INCLUSIVE, FROM ALL CAUSES (EXCLUSIVE OF STILLBIRTHS), FOR ALL AGES; DEATHS OCCURRING AMONG CHILDREN UNDER FIVE YEARS OF AGE SEPARATELY SHOWN

Year.	Total Deaths.	Under One Year.	Under Two Years.	Under Three Years.	Under Four Years.	Under Five Years.
1914	23,382	3,872	4,502	4,872	5,105	5,293
1915	22,755	3.871	4,381	4,663	4,882	4,953
1916	24,295	3,865	4.499	4,844	5,058	5,222
1917	23,955	3,698	4,211	4,507	4,741	4,887
1918	31,380	3,987	4.783	5,250	5,542	5,787
1919	24,874	3,423	3,995	4,218	4,451	4,624
1920	25,659	3,710	4.318	4,616	4,851	5,005
1921	22,826	3,366	3,765	4,011	4,199	4,367

Minnesota State Board of Health

Division of Preventable Diseases

Report for Biennial Period

January 1, 1920, to December 31, 1921

By O. McDANIEL, M. D., Director
and
E. M. WADE, M. A., Chief of Laboratories

MINNESOTA STATE BOARD OF HEALTH

DIVISION OF PREVENTABLE DISEASES

Biennial Report, January 1, 1920, to December 31, 1921

By O. McDANIEL, M. D., Director
and
E. M. WADE, M. A., Chief of Laboratories

INTRODUCTION

The scope of the work of this Division under its four natural subdivisions, Epidemiology, Laboratories, Pasteur Institute and Poliomyelitis After-Care, was outlined in the two last biennial reports.

Upon recommendation of the State Board of Health, the Pasteur Department, established August 1, 1907, was abolished July 1, 1921, by the legislature. The reasons given for such recommendation were:

1. Very few cases of rabies in lower animals occurred during the last three years.

2. Satisfactory anti-rabic vaccine is available through the commercial houses at a reasonable charge and treatment may be given by private physicians or through local boards of health, enabling bitten individuals to remain at home while undergoing treatment.

3. Local health boards are authorized under section 4646, Revised Statutes, to bear expense for such preventive treatment.

The State Board of Health also recommended to the 1920-1921 legislature that the Poliomyelitis After-Care work, placed by the 1917 legislature under this Division, be removed and placed under the State Hospital for Indigent Crippled and Deformed Children, Phalen Park, St. Paul, since the work is orthopedic in character and logically belongs under an established orthopedic department. This recommendation was approved by the legislature and the Division was relieved of this work July 1, 1921. Complete records of 2,034 cases, together with five volumes (Shipman binders) of nurses' weekly reports, with a spot map of cases then under active supervision, were turned over to the State Hospital.

Through the co-operation of the Advisory Commission of the State Sanatorium for Consumptives, it has been possible to prepare county lists of reported tuberculous cases and deaths for the use of sanatorium authorities, county and other public health nurses and others as an aid to field work. To prepare the county lists it was necessary to duplicate the "life file" which contains a card record of each tuberculous case now living which has been reported since January, 1913. While the life file cards are necessarily arranged alphabetically so that new reports from whatever district may be checked against it to avoid duplication of contained records, the duplicate file is arranged under counties and as new cases are reported and later information is received a duplicate record is filed under the proper county.

Co-operation similar to that previously given to the Division of Sanitation in its supervision of certified dairies has been extended also in its supervision of pasteurization plants and certain raw milk dairies. (See page —, report of Division of Sanitation and also page —.) This Division endeavors in this work to exclude from milk handling all persons who are in an infectious state, whether suffering from active disease or merely carriers of disease producing organisms.

CHANGES IN PERSONNEL

During the biennium the Division in all its branches of work has suffered seriously from loss of trained workers who through long periods of service were thoroughly acquainted with the needs and demands of the work and had become invaluable to it. Many of these changes were unadvoidable for financial reasons, the Division being unable to compete with other agencies employing similarly trained workers. Epidemiologists, for example, accepted posts offering from $1,000.00 to $1,500.00 more than they were receiving here, while apparently no greater demands or responsibilities were placed upon them, and at the same time the outlook for increase in salary with term of service and opportunity for advancement is, without doubt, greater.

The former Director, Dr. A. J. Chesley, who entered war service early in 1918, and who later was in charge of the American Red Cross Relief work in Poland, returned October 1, 1920, but was soon after made Acting Executive Officer, and on May 3, 1921, Executive Officer. Were it not for the fact that the former Director has remained with the Board as its Executive Officer, his loss would be much more keenly felt by this Division.

Dr. H. A. Burns, who had served as Epidemiologist since November, 1912, except during the war period, resigned September 15, 1920, to accept a post as Passed Assistant Surgeon in the United States Public Health Service.

Dr. W. P. Greene, who had served this Division continuously as Epidemiologist since June, 1913, resigned December 1, 1920, to enter the United States Public Health Service with rank of Surgeon.

The loss of both Epidemiologists after long services and a thorough knowledege of the demands of the work, soon followed by the elevation of the Director to the Executive Officership, crippled the work of the Division very seriously.

In November, 1920, Dr. J. N. Gehlen was appointed Epidemiologist after having had valuable experience in medical and sanitary work in the United States Navy, followed by one year in private practice where somewhat unusual opportunities for study and diagnosis were afforded.

In March, 1921, the services of Dr. Charles H. Halliday as Epidemiologist were secured upon his return from Poland, where, after the close of the World War, and following more than 12 years service in the United States

Army, he had been engaged in Red Cross Relief Work under the American Commission to Poland. Dr. Halliday remained with the Division but a short time, resigning early in October, 1921, to enter the United States Public Health Service in Washington, D. C., with rank of Surgeon.

Dr. A. R. Blakey, who had formerly worked for the State Board of Health in special tuberculosis and statistical work, was appointed Epidemiologist in November, 1921.

In the Main Laboratories at the beginning of the biennium there was but one bacteriologist to assist Miss E. M. Wade, Chief, in carrying the work. Happily in the spring of 1920 we were enabled to again employ two bacteriologists. Miss Winifred I. Kelly, B. A., who had had two years' experience in a bacteriological laboratory, was appointed Second Bacteriologist in April, 1920, and in September, 1920, was promoted to the post of First Bacteriologist, succeeding Miss Mary J. Fraser, resigned.

Miss Mary E. Giblin, B. S., who had had two years' experience in bacteriological work, was appointed Second Bacteriologist in December, 1920, and has since remained in service.

With the heavy increase in work following the opening of schools in September, 1921, it was necessary to employ an Assistant Bacteriologist on part time in addition to the above.

Anticipating the discontinuance of the Poliomyelitis After-Care work in July, 1921, when her services would no longer be needed, Miss Edith P. Rommel, Special Field Nurse, resigned June 1, 1921, to take up similar work with the Minneapolis Board of Education in the Michael Dowling School for Crippled Children. Miss Winifred Tougas, Special Poliomyelitis Examiner in charge of the Poliomyelitis After-Care field work, remained until this work was concluded, June 30, 1921.

Dr. George F. Swinnerton, who on part time had assisted in the Pasteur Department, continued in this work until its conclusion, June 30, 1921.

The loss through death of Miss Agnes Bacon, Chief Clerk and Stenographer, who had served most faithfully and efficiently more than sixteen years, is still most keenly felt. Miss Bacon's understanding of the work and of its purpose, gained through active participation in its development, and her unusual ability for detail work, together with her unbounded energy and sincerity which were only equaled by her matchless good humor, made her an invaluable worker.

Another notable loss was that of Alex Janzig, technician, who had been with the Department over fourteen years and who resigned July, 1921, to accept a higher salaried post with the Minneapolis City Water Department.

In the Duluth and St. Louis County Branch Laboratory, Duluth, Minn., two valuable workers of long service were lost.

Dr. T. R. Martin, who since 1912 served on part time as Bacteriologist in Charge, Branch Laboratory, Duluth, resigned December, 1921, to devote all his time to private practice. Dr. Martin very kindly consented upon his resignation to act without compensation in an advisory capacity and in January, 1922, he was appointed by this Board as Consultant to the Bacteriologist in Charge.

Miss Vera M. Peacock, B.S., was appointed November 7, 1921, to succeed Dr. Martin.

Miss Anna Segerman (now Mrs. W. A. Coventry), who for fourteen years served the Branch Laboratory, Duluth, in the dual capacity of clerk and technician, resigned November 15, 1921.

During the outbreak of paratyphoid in 1921, it was necessary to employ for brief periods a third epidemiologist and three medical students for investigative and control work.

As an emergency measure it became necessary on twenty-six occasions to employ outside physicians for epidemiological work. The following were employed for special investigations or brief periods at different times during the biennium:

Dr. H. S. Diehl
Dr. G. D. Haggard
Dr. C. E. Nixon
Dr. J. C. McKinley
Dr. C. T. Ekelund
Dr. Stanley Mulholland
Dr. W. P. Shepard
Mr. H. J. Pendergast
Mr. W. C. Stillwell

PERSONNEL AT CLOSE OF BIENNIUM

Dr. O. McDaniel, Director.

Dr. J. N. Gehlen, Senior Epidemiologist.

Dr. A. R. Blakey, Epidemiologist.

Miss E. M. Wade, M.A., Chief of Laboratories.

Miss Winnifred I. Kelly, B.A., First Bacteriologist, Main Laboratories.

Miss Mary E. Giblin, B.S., Second Bacteriologist, Main Laboratories.

Dr. Florence R. Weaver (part time), Assistant Bacteriologist, Main Laboratories.

Miss Vera M. Peacock, B.S., Bacteriologist in Charge, Branch Laboratory, Duluth.

In adition to the professional workers, there are in the Division offices in Minneapolis, including the Main Laboratories, a chief clerk and stenographer, three stenographers, six record and report clerks, two shipping clerks, one technician, four laboratory attendants and one animal house care-taker. In the Duluth Branch Laboratory a clerk also assists in general laboratory work and in receiving and shipping outfits.

All media used in the Branch Laboratory is prepared in the Main Laboratories and all glassware, etc., as far as possible, is cleaned and sterilized in the Main Laboratories.

CHANGES IN REPORTABLE LIST OF DISEASES AND IN THE REPORTING OF RARE AND UNUSUALLY DANGEROUS DISEASES

Since 1913, Regulation 300 has required that certain rare and unusually dangerous communicable diseases, in some of which a field investigation is desired in each case, be reported directly to the State Board of Health by telephone or telegraph.

The Board of Health at its meeting July 12, 1921, amended this regulation, adding botulism, epidemic encephalitis, epidemic jaundice and Vincent's angina to the previous list but divided the list into two groups, Group 1 to be reported directly to this Division as formerly by telegraph or telephone, and Group 2 to be reported by mail.

Regulation 300: Notification within twenty-four hours by telegram or telephone in Group I diseases, and by mail in Group II diseases, shall be given by the attending physician to the Division of Preventable Diseases of the State Board of Health (University Campus, Minneapolis), when called to a case or suspected case of:

*Group I

Anthrax (also see chapter 81, Laws 1921
Asiatic Cholera
Botulism
Epidemic Encephalitis (encephalitis lethargica)
Epidemic Jaundice
Epidemic or Septic Sore Throat
Glanders
Plague
Rabies (human cases and exposed persons) (also see chapter 541, Laws 1913)
Rocky Mountain Spotted or Tick Fever
Typhus Fever
Yellow Fever

or when a death occurs from any of these diseases.

*Note. Since these are rare diseases in Minnesota, no other regulations have been adopted (except for rabies) (See Regulation 1100), page 77, but every case will be investigated by the State Board of Health and necessary orders concerning the control of the disease will be issued to the local health authorities by the Executive Officer of the State Board of Health.

*Group II

Actinomycosis
Dengue
Dysentery
  (a) Amebic
  (b) Bacillary
Favus
Hookworm Disease
Leprosy
Malaria
Paragonimiasis
Pellagra
Tetanus (including tetanus neonatorum)
Trichinosis
Vincent's Angina

or when a death occurs from any of these diseases.

At the same meeting the responsibility for reporting frank and suspected cases of communicable diseases was placed upon the head of the house when there is no attending physician or other specified person responsible for reporting same, and paratyphoid fever was added to the notifiable list of usual communicable diseases.

Regulation 301 reads:

Notification within twenty-four hours by the regular reporting postcard or special blank provided shall be made by the attending physician (or other person as specified) to the local health officer in cities and villages and to the chairman of the board of supervisors in townships, of each case or suspected case of:

Anterior Poliomyelitis
Cerebrospinal Meningitis
Chickenpox
Diphtheria
Erysipelas
Influenza (and Pneumonia following)
Measles (and Pneumonia following)
Ophthalmia Neonatorum
Paratyphoid Fever
Pneumonia
†Rabies (persons exposed to, etc.)
Scarlet Fever (Scarlatina, Scarlet Rash)
Smallpox
Trachoma
Tuberculosis
Typhoid Fever
Whooping Cough

The householder of any house or tenement wherein any case or suspected case of reportable disease exists shall notify the local health authorities within twenty-four hours after the existence of such case or suspected case comes to his knowledge provided there is no attending physician or other specified person responsible for reporting the same. In the absence of medical attendance a person developing a skin eruption following any symptoms of fever, headache, backache, sore throat, or general malaise shall be considered as a suspected case to be reported by the householder.

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*See note following Regulation No. 301 re venereal diseases.

†See also Chapter 541, Laws of 1913, re control of rabies in animals and Regulation 300 re telegraphic reports of human cases.

The local health officer in cities and villages and the chairman of the board of supervisors in townships shall forward within twenty-four hours after receipt of same to the Division of Preventable Diseases, State Board of Health (University Campus, Minneapolis), the original reports, first transcribing in a permanent record (book or card file), all essential information of cases of the above diseases.

(Note: These diseases are under the control of the local health officer who is governed by the Regulations of the State Board of Health and by local ordinance.)

(Note: VENEREAL DISEASES—Syphilis, gonorrhea and chancroid must be reported immediately to the State Board of Health, on a form supplied for the purpose, by any person who makes a diagnosis of, or gives treatment for, a case of syphilis, gonorrhea or chancroid. See special regulations re-venereal diseases.)

PREVALENCE OF DISEASE

Smallpox prevailed unduly throughout the biennium as in other states having a large proportion of their citizenship unprotected by vaccination. This disease was so mild that relatively few cases sought physicians' care and the reported cases do not begin to indicate its real prevalence.

In a similar manner scarlet fever, for the most part mild, has had widespread prevalence in the state. In spite of much enthusiasm along public health lines among the citizens of the state variously expressed through many civic organizations in their eagerness for lectures, talks, literature, etc., and in their more or less substantial support of public health nursing and other public health work, much apathy on the part of individuals has permitted these two diseases to run riot in many quarters. In many districts concealing scarlet fever through not calling a physician until after acute nephrits, middle ear abscess or other complication arises, or death is imminent, has been the rule. Township officers and village health boards, not wishing to incur expense for authorized medical investigation of cases and suspected cases, inspection of school chillren, etc., in the presence of an outbreak, fail to impose restrictions and therefore permit spread of infection to neighboring, and frequently to remote sanitary districts in Minnesota, and even to localites outside of the state.

The morbidity figures for smallpox and scarlet fever as well as for chickenpox, measles and whooping cough, do not begin to approximate the actual number of cases which occurred.

The morbidity figures for all the diseases for the years 1918 to 1921, inculsive, are given on pages 102 to 139.

INFLUENZA EPIDEMIC

The expected return of influenza appeared January 20, 1920, when reports began to come in from various parts of the state.

Happly the epidemic was of short duration, reaching its height in February. While not a few deaths resulted, the disease was almost universally reported as much milder than during the 1918–1919 epidemic. Many cases were so mild that medical care was not sought and a vast number of cases were not reported. (See page 120 for figures.)

TYPHOID AND PARATYPHOID FEVER

During the bienium, 1,460 cases of typhoid and paratyphoid fever, including 161 deaths, occurred, while during the preceding biennium there were but 1,286 cases reported, including 165 deaths. Two outbreaks of considerable importance, one of typhoid fever in St. Paul (approximately 80 cases) during the spring and summer of 1920, the other of paratyphoid fever in Minneapolis (106 listed cases) during the spring of 1921, occurred. It is regretted that only a preliminary investigation of the outbreak in St. Paul could be undertaken by the State Board of Health in relation to a number of the cases which occurred in persons, who, while employed in St. Paul, were living temporarily outside of the city. Our investigation was not carried far enough to warrant final conclusions as to source of this outbreak. A brief report of the paratyphoid outbreak is given below.

PARATYPHOID FEVER OUTBREAK, UNIVERSITY OF MINNESOTA IN 1921

The first cases occurred about March 10. In most cases the onset was abrupt with high temperature, vomiting and marked prostration, followed in some by rapid decline in temperature and recovery. Many of the early cases showed respiratory symptoms, and the outbreak was at first thought to be one of influenza, "intestinal type," and was so reported by the Director of the University Health Servce. The Widal reaction was absent in a blood specimen from one student, received March 19, and from five others received on March 22. On March 25, a positive Widal reaction was reported to the Health Service in two University students, one sick at the Health Service Infirmary, and one who had gone to his home in Buffalo, Minn.

B. paratyphosus B. was isolated in the Division Laboratories from a specimen of feces received March 25, and B. paratyphosus B. was later isolated from more than twenty of the victims of the outbreak but in no instance were true typhoid organisms found.

In co-operaton with the University Health Service, the Epidemiologists made careful clinical study of cases as well as a thorough investigation of possible sources of the outbreak. Students were directed to apply to the Health Service on slightest feeling of illness. Because of this service a much larger number of cases are listed than would have been listed if the same persons had gone to individual private physicians who would not have been on the alert for atypical symptoms of paratyphoid infection and who would not have utilized the agglutination blood test as a means of diagnosis. The illness in some was so transient and so mild in character that had it not been for knowledge of an epidemic and for free medical service, in all probability many of the victims would not have sought medical service. The Epidemiologists also investigated all cases in students, 18 in number, who had gone to their homes in different parts of the state for their spring vacation.

In all, 106 cases, including two deaths, were listed among students, faculty, employes of the Men's Union, and persons, 17 in number, not directly connected with the University. All but three had taken at least one meal at the Men's Union, a cafeteria on the University Campus. Of 103 persons who ate at the Men's Union all but three had partaken of milk, either as a beverage or in coffee, on puddings, etc. Bulk milk, the probable vehicle of infection, is said to have been pasteurized before delivery, and the company supplying it supplied similar bulk milk in large quantities to other customers.

Paratyphoid fever did not prevail to any noticeable extent in the Twin Cities although at least four typical cases, in persons who had no connection with the University outbreak, occurred in Minneapolis during the period of this outbreak. It is noted, however, that bottled milk from the same company supplying the Men's Union was used in the homes of one of these cases and that of one of the patients listed in this outbreak. The latter, while connected with the University, denied having eaten at the Men's Union.

At the time of the outbreak and including a four weeks' period prior to it, there had been 96 employes at the Union, 28 full time and 68 part time (students), all of whom took one or more meals there daily. Bowel and bladder discharges were examined from all except one full time employe who had paratyphoid fever and was treated in her own home and three others who had severed their connection with the Union prior to the investigation. B. paratyphosus B. was obtained in specimens of feces from four full time employes, two of whom had had no symptoms whatever and two had had such slight symptoms that they had not mentioned it and had continued to work. B. paratyphosus B. was obtained from discharges of two part time workers (students), both of whom were definitely ill during the outbreak.

It might be concluded that one of the infected workers who had had no symptoms was a chronic paratyphoid carrier and responsible for infecting the milk, which was shown epidemiologically to be the medium of infection in this outbreak. Careful study of the whole situation, however, renders it impossible to finally conclude that such was the case, although the possibility is not denied.

In one student who had had no illness of any kind but who had taken many meals at the Men's Union the Widal reaction was present in a blood specimen taken at the time of giving the first dose of typhoid vaccine, free typhoid immunization having been again offered to the students as soon as the outbreak was recognized. B. paratyphosus B. was isolated from stools from this student. This fact, combined with the finding of two infected Men's Union employes who had had no symptoms of illness, suggests that these infected employes also may have received their infection from the same source as those who were sick rather than have constituted a source of infection in one of their number. A careful study of the daily activities of each worker in the Men's Union rendered it impossible to fix upon any one of the proven infected employes as having handled the milk supply in such a manner as to have infected it.

That there may have been a mild unrecognized case among the employes prior to the outbreak is very possible. No history of symptoms permitting of such a conclusion could be obtained from careful questioning of all employes who remained at the time of the investigation and there was no suggestion that the three employes who had left had been sick.

Another possible source of infection in this outbreak deserves attention. Just prior to this outbreak an active campaign against rats had been waged in Minneapolis by and through commercial bodies and rat viruses of different varieties had been advertised and used widely. It is a well known fact that some of the viruses that have been used for the extermination of rats, have at times contained paratyphoid and very closely related bacilli. Because of the danger of infecting human beings certain countries have prohibited the use of living viruses for the extermination of rats. Upon the suggestion of Miss E. M. Wade, Chief of the Laboratories, effort was made to determine if rats or mice in this section of the city were infected with paratyphoid organisms, and further, to determine if paratyphoid bacilli were present in any of the rat viruses on the market. A considerable number of rats and mice were trapped and autopsied, and a few dead or dying rats from business houses where a rat virus had been used were secured and autopsied. A few specimens of rat viruses were secured and examined. An organism indistinguishable from B. paratyphosus B. except in its agglutination reaction was found in one such specimen. It is therefore suggested that in some way rat virus possibly may have been the source of infection in this outbreak.

It is conceivable that rats or mice, after being infected through the use of rat virus, might carry the infection to other houses in the neighborhood of the place of infection, and there through their bowel and bladder discharges be the cause of an isolated case of paratyphoid fever.

It is also conceivable that excreta from an infected rodent may have been introduced into a small portion of the milk company's output, or may have been introduced into the milk after its receipt by the consumer.

It is interesting to note that shortly after this outbreak one living rat virus was withdrawn from the local market by one of the manufacturers while a substitute product was supplied by them in packages having a strikingly similar appearance to those in which the living virus was sold.

It is purposed to report all studies and findings of this outbreak in detail at some time in the near future.

TYPHOID OUTBREAK AT D., MINN., DUE TO CARRIER INFECTED MILK

In D., a village of about 250 inhabitants, 11 cases (eight children, three adults, in four families) of typhoid fever occurred between December 27, 1920, and February 28, 1921. The early cases were unrecognized, having been diagnosed as influenza, pneumonia and "nervous breakdown." All four families took milk from a source which supplied but two other families at the time of the outbreak. The dairyman, age 63, who had had typhoid fever 43 years previously, together with his wife and one child, neither of whom gave history of previous typhoid fever, had recently moved into this community where they sold a small amount of milk. The Widal reaction was absent in blood from the dairyman and his child, but present in the blood from the dairyman's wife. B. typhous was isolated from feces from the dairyman's wife, while examination of discharges from the dairyman and his child were negative.

A TYPHOID OUTBREAK DUE TO CARRIER INFECTED FOOD AT N. S., A WELL SETTLED FARMING COMMUNITY IN NORTHERN MINNESOTA

Between April 10 and 25, 1921, 14 severe cases of typhoid fever, including five deaths, all in men, developed; one secondary case developed later. The only common source of infection was found to be at a farm sale where about 100 persons, men, women and children were present and were given refreshments. The women, children and auctioneer were served a hot meal inside of the house, while the men were served a cold lunch consisting of roast pork, cheese and hog's head cheese sandwiches, and coffe. The woman, age 65, who had prepared the hog's head cheese sandwiches, gave history of typhoid fever 33 years previously. The Widal reaction was present in her blood on May 21, 1921, and B. typhosus was isolated from a specimen of feces received June 7, 1921.

TYPHOID OUTBREAKS AT R. DUE TO CARRIER INFECTED FOOD IN A RESTAURANT

Five cases (two adults, three children), in four families, occurred in patients had had several meals at a given restaurant. The wife of the proprietor, age 54, who had had typhoid fever 15 years previously, did all the cooking and handling of food. The proprietor, age 55, who had had typhoid 13 years previously, occasionally helped in waiting on the table. The Widal reaction was positive in blood from both on December 6, 1920, and B. typhosus was isolated from the urine of the proprietor on December 20. The wife of the proprietor refused to submit further discharges after one set of bowel and bladder discharges had been examined with negative results. The proprietor, himself, left the state while his wife continued the restaurant business. In Octover-November, 1921, six cases of typhoid fever (three adults, three children), in six families occurred in restaurant patrons while epidemiological evidence of other sources of infection was negative. A new law having been passed, it was possible to obtain specimens from this woman under duress of immediate closure of her restaurant, and on December 6, 1921, B. typhosus was isolated from both urine and feces specimens from the wife of this restaurant keeper. This woman and her husband were therefore forbidden to engage in any occupation involving the handling of any part of the public food supply which may be eaten without cooking after handling.

TYPHOID OUTBREAKS DUE TO CARRIER INFECTED FOOD IN D. C., A RURAL DISTRICT IN SOUTHERN MINNESOTA

,In September, 1920, about three weeks after obtaining a housekeeper, a farmer in southern Minnesota developed typhoid fever. The remaining members of the household, son and a youth who worked on the farm, also developed typhoid in November and October, respectively. In August, 1921, about four weeks after the entrance of this housekeeper into another household, an adult woman in the family developed typhoid. Ten days later a child in the neighborhood, who visited this home daily and partook of food prepared by the housekeeper, also developed typhoid.

Two secondary cases were traced to the 1920 cases and nine secondary were traced to the 1921 cases.

The housekeeper gave history of a prolonged illness with symptoms of typhoid fever early in 1920. The Widal reaction was present in her blood in May, 1921, and again in November, 1921. On May 4, 1921, specimens of bowel and bladder discharges were examined with negative results, but B. typhosus was isolated from urine received December 6, 1921.

For detailed report of the above four outbreaks, see Journal of the American Medical Association, 1922, volume 79, pages 516 to 519.

TYPHOID OUTBREAK TRACED TO "HOME BREW"

Between May 22 and June 5, 1921, nine cases of typhoid fever developed in adult males, including one boy of 16 years, among consumers of "home brew." One secondary case occurred later. While no typhoid bacilli were demonstrated in the "brew," colon bacilli were abundantly present. Raw water used to dilute the cooled hop extract before bottling was taken from a sluggish, muddy creek at a point about one-half mile below the point of entrance of sewage from an institution having a changing population of about 150 persons. The water in the creek was so muddy that the "brew" maker used it only after gravity sedimentation in buckets.

An analysis of the water by the Division of Sanitation showed it to be highly polluted, resembling sewage, and containing colon bacilli in 1/10000 c.c. amounts. The brew contained 1.57 per cent alcohol. (Division of Sanitation.)

TYPHOID OUTBREAK AT W. MINN., DUE TO CARRIER INFECTED MILK

In W., 18 cases of typhoid fever developed between September 11 and November 18, 1921. The first case occurred in dairyman B., who, up to the time of his illness, handled and distributed the milk from his own cows which were kept in dairyman A.'s barn, nearby. The two dairymen co-operated through exchanging small amounts of milk according to the demands of their respective patrons. Three cases occurred in B.'s customers. The remainder of the cases occurred in consumers of milk or cream from the A. dairy.

Dairyman A. and his brother who lived in the family, had had typhoid in 1916 and 1917, respectively.

In 1919, two cases of typhoid fever were epidemiologically traced to this family while living in another county, at which time a sister, who also had had typhoid fever, was living in the home. Bowel and bladder specimens obtained from members of the family at that time were negative. On November 21, 1921, the Widal reaction was present in blood specimens from dairyman A. and from his brother's wife, who gave no history of typhoid fever. B. typhosus was isolated from feces from dairyman A. received on November 27, 1921.

WATER BORNE TYPHOID

In a total of 192 typhoid field investigations made during the biennium, 17 cases, only, of typhoid fever could be directly charged to drinking polluted water. An additional five cases occurred as contacts to these water borne cases and are indirectly chargeable to water. In no instance was an investigated case traced to a municipal or other public drinking water supply. Nine of the 17 primary cases traced to the ingestion of polluted water drank raw water from such polluted sources as the Rainy River near Baudette Village, Beltrami County, the Swan River in St. Louis County, after it received sewage from the Village of Hibbing, etc. The danger of delivering an unsafe supply through pipes to consumer, even as a temporary emergency measure, whether in an institution, a steamboat or a municipality is clearly demonstrated by the outbreak (eight primary, two secondary cases) which occurred at the Lake Julia Sanatorium where a safe water for drinking purposes was furnished at the same time that a polluted water was accessible through the pipes.

*REPORT ON TYPHOID OUTBREAK IN LAKE JULIA SANATORIUM, PUPOSKY, BELTRAMI COUNTY, MINN., OCTOBER–DECEMBER, 1921

Eight primary cases of typhoid fever, including three deaths, occurred in patients and employes (one nurse, one maid, one visitor, one laboring man who was temporarily employed), of Lake Julia Sanatorium between October 2 and December 26, 1921. In addition, two probable secondary cases occurred in the home where the laboring man boarded when first taken sick.

An investigation showed that on July 22, 1921, the deep well water supply at the institution gave out and two days later an emergency intake and pumping equipment was installed, and untreated water was pumped from Lake Julia into the distribution system of the institution. This water was supplied until about December 15, 1921, for all purposes except drinking and cooking. The water for drinking and cooking purposes was obtained from wells, which, from an epidemiological study, could not have been involved in the outbreak.

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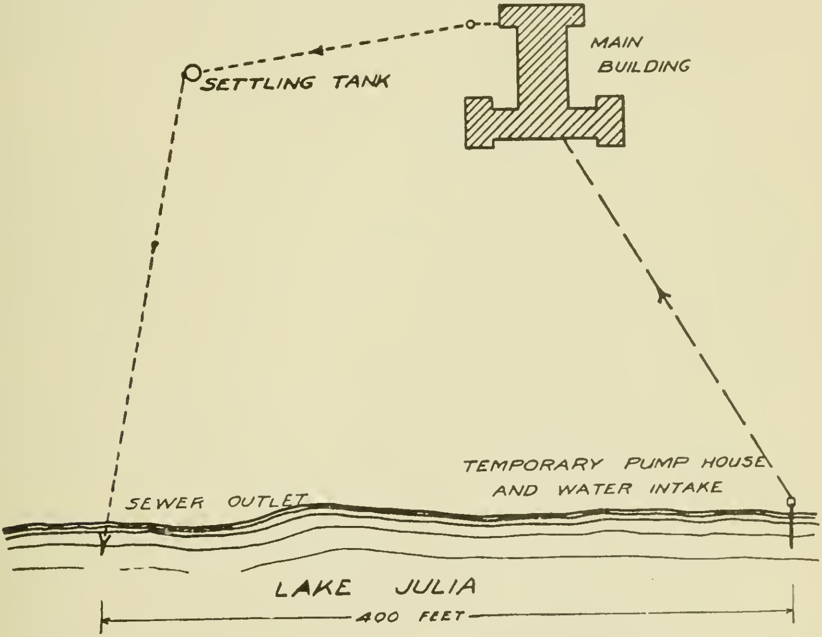
*Prepared in co-operation with the Division of Sanitation.



The sewage from this institution is discharged into Lake Julia only about 400 feet from the water intake, and since the lake water was accessible for drinking purposes through the taps in the distribution system, the untreated Lake Julia water was suspected as the source of the infection. The sewage is passed through an Imhoff tank and is then discharged on the low ground from which it flows into the lake. This treatment, if properly operated, removes a large percentage of the settleable solids but does not necessarily remove all pathogenic organisms which may have been present in the sewage before passing through the tank.

A search for carriers was made in employes and patients. One patient who had had typhoid fever 30 years previously was proven to be a typhoid carrier. This patient took no part in the preparing or serving of meals, in handling milk, or assisting in any household work at the institution. This patient entered the sanatorium September 12, 1921, and was discharged December 21, 1921.

The personal hygiene of patients and the sanitary condition of the institution were such that there is no probability that the outbreak arose through direct contact from this carrier. After a most careful study of all conditions it was concluded that the probable source of this outbreak was the infected discharges of this carrier through the ingestion of untreated Lake Julia water by residents of the sanatorium. The superintendent of the institution stated that water from the taps was used by residents in spite of warning.

It should be added that owing to the extreme hardness of the well water formerly supplied this institution, an inquiry had been made in July, 1921, as to the advisability of taking its water supply from Lake Julia. The State Board of Health under date of July 12, 1921, pointed out that Lake Julia was a contaminated source and recommended that it should not be used in the institution without filtration and subsequent chlorination.

POLIOMYELITIS EPIDEMIC 1921

Early in June, the attention of the State Board of Health was called to an outbreak in the vicinity of Sebeka and Menagha, Wadena County, which at first was thought to be cerebrospinal meningitis. In general, the onset was abrupt with temperature of 103–5, rapid pulse, headache, vertigo, pain in legs, and frequently stiff neck, ranging from slight stiffness to retraction. In some cases the head was retracted, the thighs, legs, forearms and fingers flexed. Vomiting and constipation were present in the majority of cases. Epistaxis was frequent and often the first pronounced symptom. Sore throat was frequent and both drowsiness and restlessness were common. Of the early cases, Kernig's sign was said to be present in all, and Brudsinski's sign in all severe cases; knee reflexes were increased, decreased or normal.

The early cases presenting meningeal symptoms without paralysis as a rule did not appear to be as seriously sick as the usual epidemic meningitis cases, and most cases recovered rapidly after but four or five days' illness. Multiple cases in the same family occurred and in many instances several persons in a family had, one after the other, a transient illness of but a day or two, in which the onset was abrupt with or without sore throat, and with general symptoms as above described, but without meningeal symptoms other than a stiff neck, while but one or two serious cases with marked meningeal symptoms occurred.

At the time of the Epidemiologist's first investigation, he obtained history of a rather widespread illness similar in character which had prevailed during April and May in the surrounding country. In a few instances only was there slight muscular impairment remaining.

In more than forty spinal fluid specimens from the early June cases no meningococci were found. Most fluids were clear or but slightly turbid. A few were markedly turbid but did not present the appearance of the usual purulent fluid of epidemic meningitis. In a few instances only was it possible to make a cell count in the field. When made, an increase in cells was found.

Soon after our attention was called to this outbreak, frank cases of poliomyelitis with definite paralysis occurred in this district.

Later, with the assistance of Dr. J. C. McKinley, Neuropathologist, Department of Medicine, University of Minnesota, early cases which were thought to have no muscular impairment were carefully studied, and approximately 50 per cent of these cases showed lowered or absent reflexes in one or more members, loss of muscle tone, and in a few instances actual muscular atrophy.

Coincident with the Wadena County outbreak typical cases of poliomyelitis arose near Ada, in Norman County, but no history of direct or indirect contact with Wadena County cases or residents could be obtained. The cases in this locality for the most part followed the usual types of paralyzed and abortive cases without pronounced meningeal symptoms.

From these two centers, in Wadena and Norman counties, the disease spread rapidly to the territory immediately surrounding each and to the southeast and northwest along the lines of heaviest travel, and gradually to the south, north and northwest parts of the state. The northeastern portion of the state had but few cases throughout the year, with rather wide areas apparently escaping altogether.

Few scattered cases had occurred earlier than May. The epidemic reached its height about the first week in August. The disease invaded thirty-two counties during June and July and twenty-six additional counties during August.

In all, 702 cases arising during the year were reported from 315 sanitary districts in 72 counties. (See pages 82 to 97.)

The following tables and charts cover poliomyelitis cases reported for the years 1918 to 1921 inclusive, presented as far as possible in a manner comparable to previous studies in this state.

POLIOMYELITIS—MINNESOTA
REPORTED CASES AND DEATHS 1908-1921

	1908	1909	1910	1911	1912	1913	1914
Cases	150*	900*	481	115	35	85	22
Deaths	9	234	201	58	23	30	8

*Estimated

	1915	1916	1917	1918	1919	1920	1921
Cases	123	912	75	82	85	80	702
Deaths	26	105	9	22	13	18	102

POLIOMYELITIS—MINNESOTA
REPORTED CASES BY MONTHS 1916-1921

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1916	2	3	1	......	9	16	224	343	197	95	17	5	912
1917	......	6	5	6	4	7	11	14	12	6	1	3	75
1918	1	2	......	3	2	8	11	38	13	3	1	......	82
1919	2	1	1	1	3	1	22	24	17	9	3	1	85
1920	2	1	1	1	2	1	5	21	20	15	10	1	80
1921	2	......	3	8	13	68	192	222	126	54	8	6	702

POLIOMYELITIS 1918
Basic Data for 55 Paralyzed and 15 Abortive Cases

AGES	Well		Sick		Deaths		Secondary	
	Males	Females	Males	Females	Males	Females	Males	Females
Under 1	6	1	3	2	....	....	....	....
1	1	2	5	1	1	....	....	....
2	4	5	2	1	....	....	1	....
3	3	4	3	1	....	....	....	....
4	5	4	3	3	....	....	1	2
1 to 5	13	15	13	6	1	....	2	2
5	6	5	....	....	....	....	....	....
6	4	6	1	3	....	1	....	2
7	2	5	1	1	....	....	1	....
8	3	....	1	3	1	2	1	....
9	1	1	2	3	....	2	....	....
5 to 10	16	17	5	10	1	5	2	2
10	2	4	1	....	....	....	....	....
11	1	1	2	....	1	....	....	....
12	1	4	....	2	....	....	1	1
13	2	3	1	....	....	....	....	....
14	3	....	2	1	1	1	....	1
10 to 15	9	12	6	3	2	1	1	2
15	1	4	1	....	....	....	1	....
16	4	1	....	....	....	....	....	....
17	4	2	1	....	....	....	....	....
18	2	1	....	....	....	....	....	....
19	6	1	....	2	....	1	....	....
15 to 20	17	9	2	2	....	1	1	....
20 and over	69	79	....	5	....	3	....	1
Age not given	4	7	....	....	....	....	....	....
Total	134	140	29	28	4	10	6	7

12 cases and 8 deaths with incomplete data not Inciuded.

POLIOMYELITIS 1918
ATTACK RATES (55 PARALYZED CASES ONLY)

AGES	WELL PERSONS			PRIMARY CASES						SECONDARY CASES					
	Male	Female	Total	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate
Not Given	5	4	9	......	......	......	......	......	......	......	......	......	......	......	......
Under 1	1	5	6	2	66.6	3	37.5	5	45.4	......	......	......	......	......	......
1- 4	15	9	24	5	25.0	12	57.1	17	41.2	1	6.2	1	10.0	2	7.7
5- 9	15	14	29	9	37.5	4	22.2	13	30.9	1	6.2	......	......	1	3.3
10-14	12	9	21	1	7.7	5	35.7	6	22.2	2	14.3	......	......	2	8.7
15-19	9	13	22	2	18.2	2	13.3	4	15.4	......	......	......	......	......	......
20 and over	70	62	132	4	5.4	......	......	4	2.9	......	......	1	1.6	1	.7
Total	127	116	243	23	15.3	26	18.3	49	16.8	4	3.0	2	1.7	6	2.4

POLIOMYELITIS 1918
ATTACK RATES (70* PARALYZED AND ABORTIVE CASES)

AGES	WELL PERSONS			PRIMARY CASES						SECONDARY CASES					
	Male	Female	Total	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate
Not Given	7	4	11	......	......	......	......	......	......	......	......	......	......	......	......
Under 1	1	6	7	2	66.6	3	33.3	5	41.5	......	......	......	......	......	......
1- 4	15	13	28	6	28.5	13	50.0	19	40.4	2	11.8	2	13.3	4	12.5
5- 9	17	16	33	10	37.0	5	23.8	15	31.3	2	10.5	2	11.1	4	10.8
10-14	12	9	21	3	20.0	6	40.0	9	30.0	2	14.3	1	10.0	3	12.5
15-19	9	17	26	2	18.2	2	10.5	4	13.3	......	......	1	5.5	1	3.7
20 and over	79	69	148	5	5.9	......	......	5	3.2	1	1.3	......	......	1	.7
Total	140	134	274	28	16.6	29	17.8	57	17.2	7	4.7	6	4.2	13	4.5

*12 Cases without histories not included.

POLIOMYELITIS 1918

FAMILY DISTRIBUTION OF CASES PARALYZED AND ABORTIVE

Families With	Number of Families	Initial Cases		Subsequent Cases		Total Cases
		Paralyzed	Abortive	Paralyzed	Abortive	
One Case	63	56	7			63
Two Cases	3	2	1	2	1	6
Three Cases	1		1	1	1	3
Four Cases						
Five Cases	2	1	1	5	3	10
Total	69	59	10	8	5	82

POLIOMYELITIS 1918

INTERVALS BETWEEN INITIAL AND SUBSEQUENT CASES IN FAMILIES HAVING MORE THAN ONE CASE

Days	Males	Females
2	3	2
3	1	
4	1	
7	1	1
8	1	
10	1	
14		1
51	1	
	9	4

POLIOMYELITIS 1918

TIME RELATION OF DEATH TO ONSET OF DISEASE

Day of Attack on Which Death Occurred	Deaths	
	Male	Female
2d	1	
3d	1	5
4th	3	
5th	2	1
6th	2	
8th	2	
10th	1	
13th	1	
16th		1
Total	13	7

Note: Two deaths omitted, one lack of data; one duration 5 years with continually weakening condition.

POLIOMYELITIS 1918

DISTRIBUTION OF DEATHS BY FAMILIES

Families With	Total Families	Families	Cases	Deaths
One Case	63	44 19	44 19	0 19
Two Cases	3	2 1	4 2	0 2
Three Cases	1	1	3	
Four Cases				
Five Cases	2	1 1	5 5	0 1
Total	69	69	82	22

POLIOMYELITIS 1918

FATALITY RATE

AGES	Cases			Deaths			Fatality Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Not Given	......	......	......	......	......	......	......	......	......
Under 1	3	4	7	1	......*	1	33.3	......	14.2
1- 4	10	18	28	2	2	4	20.0	11.1	14.2
5- 9	12	7	19	6	1	7	50.0	14.2	36.8
10-14	6	9	15	1	3	4	16.6	33.3	26.6
15-19	3	3	6	2	1	3	66.6	33.3	50.0
20 and over	6	1	7	3	......	3	50.0	......	42.8
Total	40	42	82	15	7	22	37.5	16.6	26.8

*One death reported 4 months later.

POLIOMYELITIS 1919

Basic Data for Paralyzed Cases

AGES	Well		Sick		Deaths		Secondary	
	Males	Females	Males	Females	Males	Females	Males	Female
Under 1	6	8	1	....	....	....	....	....
1	4	2	3	7	1	1	....	....
2	2	3	3	7	....	....	....	....
3	8	7	5	1	1	....	....	....
4	4	6	....	1	....	1	....	....
1 to 5	18	18	11	16	2	2	....	....
5	7	5	5	5	....	....	....	....
6	5	6	2	5	....	3	....	....
7	8	4	3	....	....	....	....	....
8	5	8	....	....	....	....	....	....
9	4	3	....	2	1	1	....	....
5 to 10	29	26	10	12	1	4	....	....
10	2	8	1	2	....	....	....	....
11	5	3	2	....	....	....	....	....
12	2	3	....	....	....	....	....	....
13	5	3	1	1	....	....	....	....
14	8	1	....	....	....	....	....	....
10 to 15	22	18	4	3	....	....	....	....
15	4	4	....	....	....	....	....	....
16	5	2	1	....	....	....	....	....
17	1	3	....	....	....	....	....	....
18	4	1	1	1	....	....	....	....
19	4	2	1	....	....	....	1	....
15 to 20	18	12	3	1	....	....	1	....
20 and over	81	88	3	4	1	....	....	....
Not given	2	5	....	....	....	....	....	....
Family data not given	....	....	6	10	1	5	....	....
Total	176	175	38	46	5	11	1	....

POLIOMYELITIS 1919

ATTACK RATES (69 PARALYZED CASES ONLY)

AGES	Well Persons			Paralyzed Cases					
	Male	Female	Total	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate
Not given	2	5	7	....	....	....	....	....	....
Under 1	6	8	14	1	14.3	....	....	1	6.6
1- 4	18	26	44	11	37.9	16	38.1	27	38.0
5- 9	29	26	55	10	25.6	12	31.6	22	28.5
10-14	20	18	38	4	16.6	3	14.3	7	15.5
15-19	18	12	30	4	18.2	1	7.7	5	14.3
20 and over	81	88	169	3	3.5	4	4.3	7	3.9
Total	174	183	357	33	15.9	36	16.4	69	16.2

Sixteen cases with incomplete data not included.

POLIOMYELITIS 1919
FATALITY RATE

AGES	Cases			Deaths			Fatality Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Not Given	1	1	2						
Under 1	1		1						
1- 4	14	22	36	2	6	8	14.3	27.3	22.2
5- 9	11	12	33	1	4	5	9.1	33.3	15.1
10-14	4	3	7						
15-19	4	1	5						
20 and over	4	7	11	2	1	3	50.0	14.3	25.0
Total	39	46	85	5	11	16	12.8	23.9	18.8

POLIOMYELITIS 1919
TIME RELATION OF DEATH TO ONSET OF DISEASE

Day of Attack on Which Death Occurred	Deaths
4th	1
5th	1
6th	2
7th	1
8th	1
9th	1
12th	2
14th	1
3 months, 4 days	1
11 months	1
3 years	1
Duration unknown	3
Total	16

POLIOMYELITIS 1920

Basic Data for 74 Paralyzed Cases

AGES	Well		Sick		Deaths		Secondary	
	Males	Females	Males	Females	Males	Females	Males	Females
Under 1	7	3	....	....	....	....	....	....
1	....	1	2	2	1	1	1	....
2	6	4	3	2	....	....	....	....
3	2	2	2	3	....	....	....	1
4	6	3	3	5	....	1	....	....
1 to 5	14	10	10	12	1	2	1	1
5	2	2	2	2	....	....	....	....
6	8	5	3	1	1	....	....	1
7	3	1	4	....	2	....	....	....
8	5	5	....	3	....	....	1	....
9	3	3	1	2	....	1	....	....
5 to 10	21	16	10	8	3	1	1	1
10	3	2	1	....	....	....	....	....
11	....	4	....	....	....	....	....	....
12	4	3	....	....	....	....	....	....
13	2	3	1	1	....	....	....	....
14	1	1	....	1	....	....	....	....
10 to 15	10	13	2	2	....	....	....	....
15	2	5	....	1	....	....	....	....
16	4	2	....	....	....	....	....	....
17	4	1	....	....	....	....	....	....
18	....	....	....	....	....	....	....	....
19	3	....	....	....	....	....	....	....
15 to 20	13	8	....	1	....	....	....	....
20 and over	61	62	3	3	1	....	....	....
Not given	12	15	....	....	....	....	....	....
Family data not given	....	....	13	6	5	5	....	....
Total	138	127	38	32	10	8	2	2

6 cases without history not included.

POLIOMYELITIS 1920
FAMILY DISTRIBUTION OF PARALYZED CASES

Families With	Number Families	Initial Cases	Subsequent Cases	Total Cases
One Case	73	73	....	73
Two Cases	2	2	2	4
Three Cases	1	1	2	3
Total	76	76	4	80

POLIOMYELITIS 1920
ATTACK RATES (55 PARALYZED CASES ONLY)

AGES	WELL PERSONS			PRIMARY CASES						SECONDARY CASES					
	Male	Female	Total	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate
Not Given	12	15	27	....	....	....	....	....	....	....	....	....	....	....	....
Under 1	7	3	10	....	....	....	....	....	....	....	....	....	....	....	....
1 to 4	14	10	24	10	41.7	12	54.5	22	47.8	1	6.6	1	9.1	2	7.7
5 to 9	21	16	37	10	32.2	8	33.3	18	32.7	1	4.5	1	5.8	2	5.1
10 to 14	10	13	23	2	16.6	2	13.3	4	14.8	....	....	....	....	....	....
15 to 19	13	8	21	....	....	1	11.1	1	4.5	....	....	....	....	....	....
20 and over	61	62	123	3	4.7	3	4.6	6	4.6	....	....	....	....	....	....
Total	138	127	265	25	15.3	26	17.0	51	16.1	2	1.4	2	1.5	4	1.5

POLIOMYELITIS 1920

FATALITY RATE

AGES	Cases*			Deaths			Fatality Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Not Given	1	....	1	....	....	....	....	....	....
Under 1	2	....	2	2	....	2	100.0	....	100.0
1 to 4	15	17	32	2	6	8	13.3	35.3	25.0
5 to 9	14	10	24	3	1	4	21.4	10.0	16.6
10 to 14	2	3	5	....	1	1	....	33.3	20.0
15 to 19	....	1	1	....	....	....	....	....	....
20 and over	6	3	9	3	....	3	50.0	....	33.3
Total	40	34	74	10	8	18	25.0	23.5	24.3

*6 Cases without history not included.

POLIOMYELITIS 1920

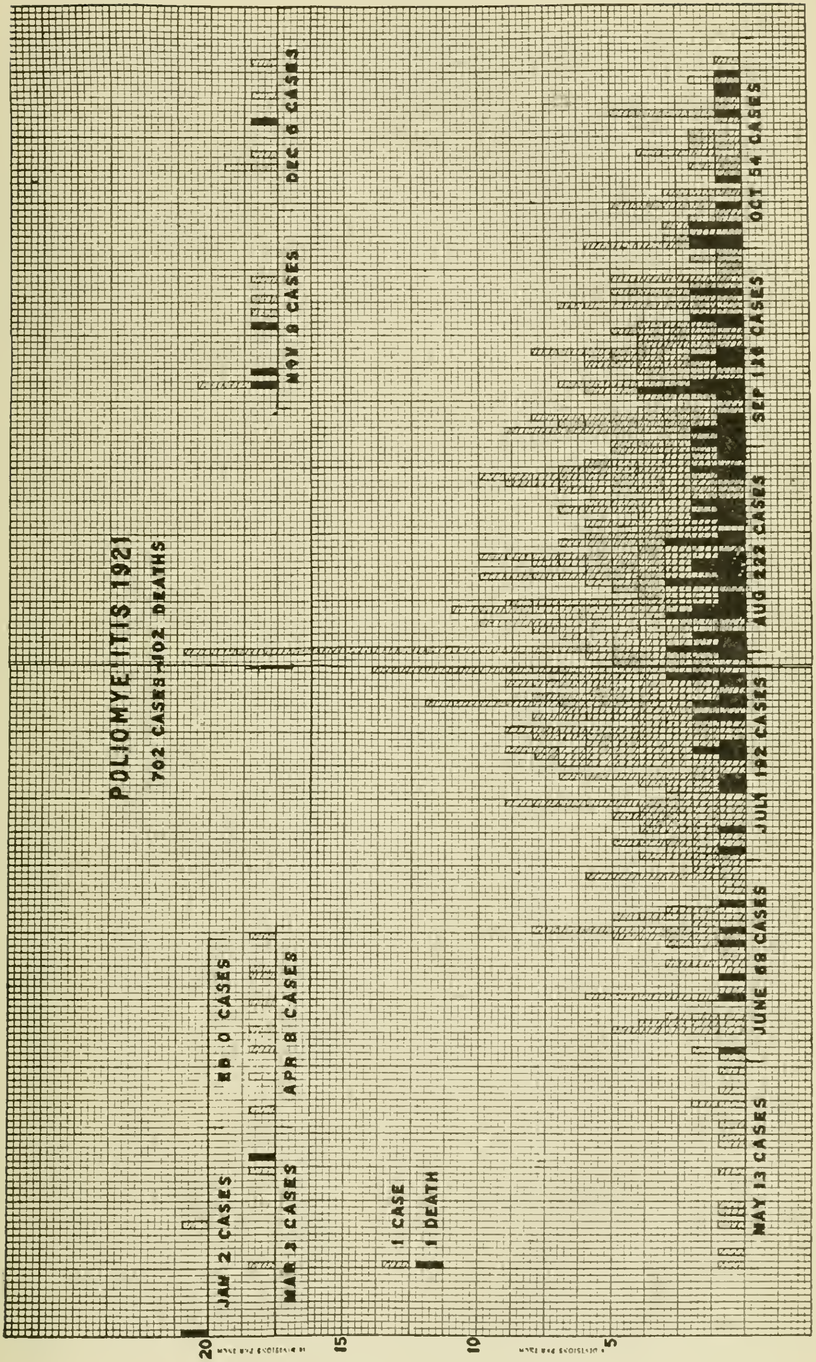
INTERVALS BETWEEN INITIAL AND SUBSEQUENT CASES IN FAMILIES HAVING MORE THAN ONE CASE

Days	Males	Females
1	1	....
4	....	1
5	1	....
39	....	1
Total	2	2

POLIOMYELITIS 1920

TIME RELATION OF DEATH TO ONSET OF DISEASE

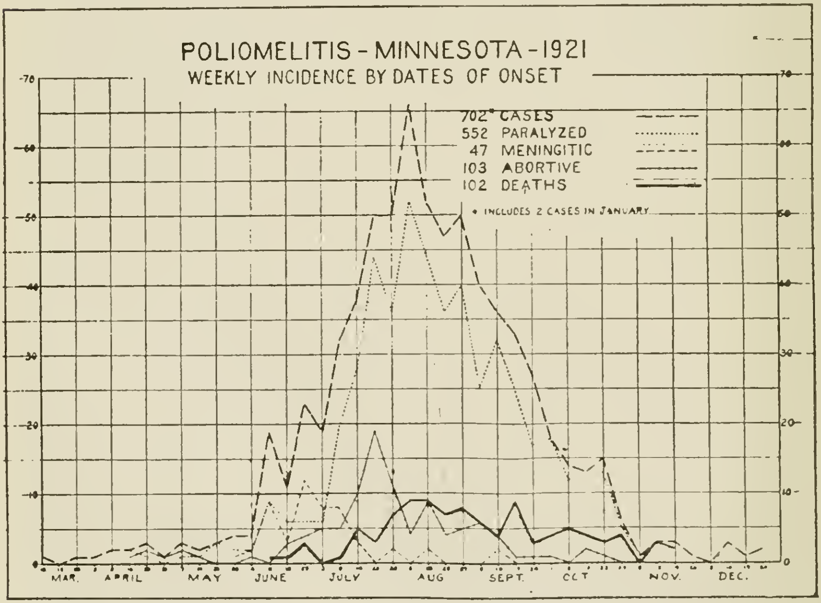
Day of Attack on Which Death Occurred	Deaths
2d	3
3rd	1
5th	2
6th	3
7th	1
9th	1
10th	1
15th	2
22d	1
124th	1
139th	1
Data Incomplete	1
Total	18


POLIOMYELITIS 1921
702 CASES 102 DEATHS
JAN 2 CASES
FEB 0 CASES
MAR 3 CASES
APR 8 CASES
MAY 13 CASES
JUNE 68 CASES
JULY 192 CASES
AUG 222 CASES
SEP 126 CASES
OCT 54 CASES
NOV 8 CASES
DEC 6 CASES
1 CASE
1 DEATH
20
15
10
5

POLIOMYELITIS 1921

TABULATION OF 712 CASES

AGES	Paralyzed		Meningeal Form		Total		Abortive		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Under 1...........	5	2	....	....	5	2	....	....	5	2
1................	19	22	3	2	22	24	1	2	23	26
2................	24	20	....	2	24	22	6	3	30	25
3................	16	17	2	3	18	20	3	1	21	21
4................	17	14	4	....	21	14	4	5	25	19
5-9	78	63	6	10	84	73	23	7	107	80
10-14.............	54	41	9	2	63	43	14	10	77	53
15-19.............	37	23	3	....	40	23	3	3	43	26
20-24.............	14	18	1	....	15	18	3	3	18	21
25-34.............	15	7	....	....	15	7–	....	3	15	10
35-44.............	1	....	....	....	1	....	....	....	1	....
45-54.............	....	1	....	....	....	1	....	....	....	1
Unknown.........	30	14	....	....	30	14	9	....	39	14
Total.........	310	242	28	19	338	261	66	37	404	298



POLIOMYLITIS 1921

Basic Data for 346 Paralyzed Cases

AGES	1540 Well		327 Sick		44 Deaths		19 Secondary	
	Males	Females	Males	Females	Males	Females	Males	Females
Under 1	10	15	5	2	....	....	....	....
1	21	18	14	16	1	1	....	....
2	20	12	13	13	1	1	....	....
3	19	17	11	8	1	1	1	....
4	23	18	9	10	3	....	1	1
1 to 5	83	65	47	47	6	3	2	1
5	20	22	14	4	3	....	2	....
6	21	26	12	9	1	1	2	1
7	20	17	8	9	1	1	....	1
8	19	26	9	7	2	1	1	....
9	21	18	5	5	....	....	....	1
5 to 10	101	109	48	34	7	3	5	3
10	15	25	5	4	....	2	....	....
11	21	17	6	6	....	1	....	1
12	14	18	6	8	....	1	1	....
13	16	9	6	5	2	2	....	....
14	14	8	9	4	1	2	....	2
10 to 15	80	77	32	27	3	8	1	3
15	16	13	4	2	....	....	1	....
16	5	19	6	5	....	2	....	....
17	8	8	6	2	1	....	....	....
18	14	8	7	3	1	1	2	....
19	7	4	9	....	1	....	....	....
15 to 20	50	52	32	12	3	3	3	....
20 and over	383	364	23	14	4	4	....	1
Not given	78	73	4	....	....	....	....	....
Total	785	755	191	136	23	21	11	8

POLIOMYELITIS 1921
FAMILY DISTRIBUTION OF CASES
(Paralyzed, Meningeal and Abortive)

FAMILIES WITH	Number Families	INITIAL			SUBSEQUENT			TOTAL			All Cases
		Paralyzed	Meningeal	Abortive	Paralyzed	Meningeal	Abortive	Paralyzed	Meningeal	Abortive	
One Case	580	494	24	62				494	24	62	580
Two Cases	32	17	7	13	16	4	7	33	11	20	64
Three Cases	13	9	2	5	8	10	5	17	12	10	39
Four Cases	2	1		1	3		3	4		4	8
Five Cases	1	1		1	3			4		1	5
Six Cases	1			1			5			6	6
Total	629	522	33	83	30	14	20	552	47	103	702

POLIOMYELITIS 1921
ATTACK RATES (327 PARALYZED CASES ONLY)

AGES	WELL PERSONS			PRIMARY CASES						SECONDARY CASES					
	Male	Female	Total	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate
Not Given	78	73	151	4	4.9			4	2.5						
Under 1	10	15	25	5	33.3	2	11.7	7	21.9						
1- 4	83	65	148	47	36.1	47	41.9	94	38.8	2	2.3	1	1.5	3	2.0
5- 9	101	109	210	48	32.1	34	23.8	82	28.1	5	4.7	3	2.7	8	3.7
10-14	80	77	157	32	28.6	27	25.9	59	27.3	1	1.2	3	3.7	4	2.5
15-19	50	52	102	32	39.0	12	18.7	44	30.1	3	5.7			3	2.8
20 and over	383	364	747	23	5.7	14	3.7	37	4.7			1	.3	1	.2
Total	785	755	1,540	191	19.6	136	15.2	327	17.5	11	1.4	8	1.0	19	1.2

POLIOMYELITIS 1921
ATTACK RATES (480 ABORTIVE AND PARALYZED CASES)

AGES	WELL PERSONS			PRIMARY CASES						SECONDARY CASES					
	Male	Female	Total	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate	Male	Attack Rate	Female	Attack Rate	Total	Attack Rate
Not Given	88	90	178	4	4.4	....	....	4	2.2	....	....	....	....	....	....
Under 1	15	19	34	5	25.5	2	9.5	7	17.1	....	....	....	....	....	....
1 to 4	101	83	184	65	38.5	57	40.7	122	39.8	11	9.8	9	9.8	20	9.8
5 to 9	125	131	256	65	34.2	50	27.6	115	31.0	13	9.3	4	3.0	17	6.2
10 to 14	105	106	211	44	29.5	34	24.3	78	27.0	10	8.7	7	6.2	17	7.4
15 to 19	66	72	138	35	34.6	12	14.3	47	25.4	6	8.3	1	1.3	7	4.8
20 and over	490	457	947	25	4.8	18	3.8	43	4.3	1	.2	2	.4	3	.3
Total	990	958	1,948	243	19.7	173	15.3	412	17.5	41	4.0	23	2.3	64	3.1

POLIOMYELITIS 1921
DISTRIBUTION OF DEATHS BY FAMILIES FOR 599 CASES
Paralyzed and Meningeal

Families With	Total Families	Families	Cases	Deaths
One Case	539	445 94	445 94	94
Two Cases	24	19 5	38 10	6
Three Cases	4	2 2	6 6	2
Total	567	567	599	102

POLIOMYELITIS 1921

FATALITY RATE

Paralyzed and Meningeal Cases

AGES	Cases			Deaths			Fatality Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Under 1	5	2	7	....	1	1	....	50.0	14.2
1-4	85	80	165	19	8	27	22.5	10.0	16.3
5-9	84	73	157	14	5	19	16.6	6.8	12.0
10-14	63	43	106	8	11	19	12.7	25.6	17.9
15-19	40	23	63	6	8	14	15.0	34.8	22.2
20 and over	31	26	57	12	10	22	38.7	43.1	38.6
Unknown	30	14	44	....	....	....	....	....	....
Total	338	261	599	59	43	102	14.5	16.4	17.0

POLIOMYELITIS 1921

INTERVALS BETWEEN INITIAL AND SUBSEQUENT CASES IN FAMILIES HAVING MORE THAN ONE CASE

(Meningeal, Paralyzed and Abortive Cases)

Days	Males	Females	Total
0	8	4	12
1	10	4	14
2	6	2	8
3	2	2	4
4	2	1	3
5	2	3	5
6	3	2	5
7	2	....	2
8	2	1	3
9	1	....	1
10	....	1	1
14	1	....	1
15	1	....	1
16	1	....	1
19	....	1	1
24	....	1	1
25	1	....	1
Total	42	22	64

POLIOMYELITIS 1921

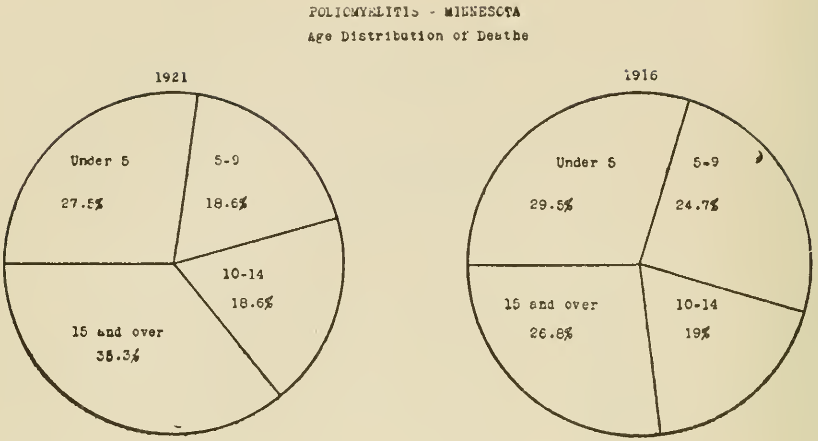
TIME RELATION OF DEATH TO ONSET OF DISEASE

Day of Attack on Which Death Occurred	Deaths
1st	2
2d	6
3d	15
4th	16
5th	12
6th	17
7th	3
8th	10
9th	2
10th	1
11th	3
12th	2
13th	2
15th	2
18th	1
19th	2
20th	1
21st	2
32d	1
37th	1
38th	1
Total	102

POLIOMYELITIS 1921

CLASSIFICATION OF DEATHS

AGES	Paralyzed		Meningeal		Total		Total Deaths
	Male	Female	Male	Female	Male	Female	
Under 1		1				1	1
1	2	2	1	1	3	3	6
2	5	5	1		6	5	11
3	3				3		3
4	6		1		7		7
5-9	14	2		3	14	5	19
10-14	8	10		1	8	11	19
15-19	6	8			6	8	14
20-24	4	6			4	6	10
25-34	7	2			7	2	9
35-44	1	1			1	1	2
45-54		1				1	1
Total	56	38	3	5	59	43	102
Deaths	94		8		102		
Rate	17%		17%		17%		
Cases	552		47		599		



POLIOMYELITIS AFTER-CARE

During 1920 and up to date of discontinuance of this work on June 30, 1921 (see page 99), the field work was carried on by the Special Examiner alone except for one and one-half months, April 15 to June 1, 1920, when she was assisted by a nurse.

During 1920, a total of 330 examinations and 557 visits were made. Of 256 cases re-examined, 227 showed improvement and 29 were unimproved. Of 74 new cases examined, nine were not poliomyelitis.

In the spring of 1921 the work was interrupted owing to injuries sustained by Miss Winifred Tougas, the examiner, who was in a railway accident near Rockford as she was enroute to the northwestern part of the state to visit cases. A total of 63 examinations and 100 visits, however, were made. Of 41 cases re-examined, 35 showed improvement, while six were unimproved.

ANALYSIS OF 65 POLIOMYELITIS CASES EXAMINED IN 1920 AND 21 EXAMINED IN 1921 (6 MONTHS)

During 1920		1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	18	19	21	23	24	Total
Before 1916	Male	......	......	......	......	......	......	......	......	......	1	2	1	......	1	1	2	......	......	......	......	8
	Female	......	......	......	......	......	......	1	1	1	1	......	1	3	3	1	1	......	......	......	......	13
1916	Male	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	1
	Female	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1
1917	Male	......	......	1	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2
	Female	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1918	Male	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
	Female	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1
1919	Male	1	......	1	2	1	......	1	1	......	......	1	......	......	......	......	......	......	......	......	......	8
	Female	......	......	3	......	2	......	1	......	......	......	......	1	......	......	......	......	1	1	1	......	10
1920	Male	1	......	1	......	1	1	1	3	......	......	......	......	......	......	......	......	......	......	......	1	9
	Female	1	2	......	3	2	1	......	1	1	......	......	1	......	......	......	......	......	......	......	......	12
Total Examined		3	2	7	5	7	3	5	6	2	2	3	4	3	4	2	3	1	1	1	1	65
During 1921 (6 months)																						
Before 1916	Male	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
	Female	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	1
1919	Male	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
	Female	......	......	1	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2
1920	Male	......	2	2	1	1	......	2	1	......	1	......	......	......	......	......	......	......	1	......	......	11
	Female	......	......	......	1	......	1	......	1	......	......	......	......	1	......	......	......	......	1	......	......	5
1921	Male	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1
	Female	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1
Total Examined			2	4	3	2	1	2	2	1	1	......	......	1	......	......	......	......	2	......	......	21

RECOMMENDATIONS FOR 65 NEW CASES EXAMINED DURING 1920

In 1 case massage only was recommended.
In 20 cases massage and muscle training were recommended.
In 15 cases massage, muscle training, and appliances were recommended.
In 6 cases appliances only were recommended.
In 3 cases appliances and operation were recommended.
In 6 cases operation only was recommended.
In 2 cases recommendations for Phalen Park.
In 5 cases no recommendation, complete recovery.
In 1 case no recommendations, under Orthopedist's care.
In 1 case no recommendations, going to Chiropractor.
In 1 case no recommendations, hopeless.
In 4 cases no recommendations, still tender.

RECOMMENDATIONS FOR 21 NEW CASES EXAMINED DURING 1921 (6 months)

In 1 case operation was recommended.
In 5 cases massage, muscle training, and appliances were recommended.
In 7 cases massage and muscle training were recommended.
In 3 cases muscle training and appliances were recommended.
In 1 case appliances only were recommended.
In 4 cases no recommendations were made, complete recovery.

INTERSTATE RECIPROCAL NOTIFICATIONS

1920

Class A—Cases of Communicable Disease Recognized in This State But Infected Outside of Minnesota

Smallpox
1 case in Minnesota referred to 1 sanitary district in 1 state.

Typhoid Fever
16 cases reported by 14 sanitary districts in Minnesota, referred to 15 sanitary districts of 6 different states and one Canadian province and 1 case infected on Mississippi river boat referred to United States Public Health Service.

Tuberculosis
9 cases reported by 4 sanitary districts of Minnesota referred to 5 sanitary districts of 3 different states.

Poliomyelitis
1 case referred to 1 sanitary district of 1 state.

Anthrax
1 case referred to 1 sanitary district of 1 state.

Malaria
1 case referred to 1 sanitary district of 1 state.

Diphtheria
4 cases reported by 4 sanitary districts of Minnesota referred to 3 sanitary districts of 3 different states.

Class B—Persons Leaving This State for Another While In an Infectious Condition (Carrier or Active Case)

Typhoid Fever
1 case referred to 1 sanitary district of 1 state.

Diphtheria
4 cases reported by 3 sanitary districts of Minnesota referred to 4 sanitary districts of 3 different states.

Tuberculosis
271 cases reported by 13 sanitary districts of Minnesota referred to 240 sanitary districts of 25 different states, and 3 Canadian provinces.

Class C—Persons Leaving This State After Exposure to a Source or Medium of Infection or an Active Infectious Disease

Encephalitis
1 case referred to 1 sanitary district of I state.

Diphtheria
1 case referred to 1 sanitary district of 1 state.

Class A

1921

Diphtheria

2 cases reported by 2 sanitary districts of Minnesota referred to 2 sanitary districts of 2 different states.

Poliomyelitis

2 cases reported by 2 sanitary districts of Minnesota referred to 2 sanitary districts of two different states.

Scarlet Fever

I case referred to 1 sanitary district of 1 state.

Typhoid Fever

16 cases reported by 11 sanitary districts of Minnesota referred to 16 sanitary districts of 8 different states and 2 cases infected on Great Lakes boats reported by 2 sanitary districts of Minnesota referred to United States Public Health Service.

Class B

Diphtheria

4 cases reported by 4 sanitary districts of Minnesota referred to 4 sanitary districts of 3 different states.

Scarlet Fever

2 cases reported by 2 sanitary districts of Minnesota referred to 1 sanitary district of 1 state.

Trachoma

1 case referred to 1 sanitary district of 1 state.

Tuberculosis

293 cases reported by 11 sanitary districts of Minnesota referred to 237 sanitary districts of 26 different states and 3 Canadian provinces.

CASES AND DEATHS COMUNICABLE DISEASES REPORTED IN THE STATE DURING THE CALENDAR YEAR 1918.

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Actinomycosis	Cases		1				2							3
	Deaths		1				2							3
Anthrax	Cases						1							1
	Deaths													
Chickenpox	Cases	365	312	309	294	274	75	37	11	26	129	58	32	1,922
	Deaths			4		1	1			1				7
Diphtheria	Cases	315	220	333	351	373	260	227	235	289	381	318	372	3,674
	Deaths	16	15	26	18	32	21	19	16	23	42	29	23	280
Influenza	Cases	15	15	13	55	27	6	4	4	281	61,121	43,320	22,251	127,112
	Deaths	15	15	13	55	27	6	4	4	7	2,105	3,260	2,010	7,521
Malaria	Cases				3		1	1	2					7
	Deaths						1							1
Measles	Cases	471	604	696	423	661	733	323	65	23	20	19	28	4,066
	Deaths	2	3	12	18	18	14	11	1	2	4		2	87
Epidemic Meningitis	Cases	10	10	13	10	5	6	1	6	3	1	1	2	68
	Deaths	3	2	5	4	3	4	3	2	3	2	3	1	35
Pellagra	Cases			3					1					4
	Deaths							2						2
Pneumonia	Cases	200	172	210	426	193	99	67	30	72	1,485	2,126	725	5,805
	Deaths	200	172	210	426	193	99	67	30	72	196	153	139	1,957
Poliomyelitis	Cases	1	2		3	2	8	11	38	13	3	1		82
	Deaths	2			1	1	3	4	5	5	2	1	1	25
Rabies	Cases													
	Deaths													
Scarlet Fever	Cases	331	552	833	573	581	339	144	93	100	97	52	132	3,827
	Deaths	13	17	27	29	33	7	10	3	2	2	5	5	154
Smallpox	Cases	249	284	365	259	263	213	110	44	55	68	199	176	2,285
	Deaths					4	1	1				1		7
Tetanus	Cases		1		2	3	2	2	3	7	2	1	3	26
	Deaths		1		2	3	2	2	3	6	2	1	3	25
Tuberculosis	Cases	487	354	492	472	521	392	403	409	391	300	302	368	4,891
	Deaths	209	193	222	268	265	195	174	159	173	186	242	257	2,543
Typhoid Fever	Cases	43	61	80	65	38	28	51	90	93	65	16	14	644
	Deaths	4	4	21	12	5	1	5	10	10	7	5	3	87
Typhus Fever	Cases					1								1
	Deaths													
Whooping Cough	Cases	222	312	367	639	368	184	188	89	101	99	31	19	2,619
	Deaths	3	6	21	36	33	24	20	28	15	23	21	18	248

CASES OF **CHICKENPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDER YEAR 1918 BY AGE GROUPS AND MONTHS

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	6	......	2	5	4	3	1	......	......	1	3	2	27
1- 4	16	8	16	25	18	13	3	3	2	9	7	6	126
Under 5	22	8	18	30	22	16	4	3	2	10	10	8	153
5- 9	90	74	81	51	54	39	7	5	3	65	12	4	485
10-14	30	29	27	21	14	10	6	......	2	8	5	4	156
15-19	5	9	9	8	2	3	3	1	3	2	2	......	47
20-24	2	8	1	3	1	1	3	......	1	1	......	1	22
25-34	3	3	4	4	2	3	....	1	......	2	2	1	25
35-44	1	2	......	......	......	......	......	......	1	1	1	2	8
45-54	......	......	......	......	1	......	......	......	......	......	......	......	1
55-64	......	......	1	......	......	......	......	......	......	......	......	......	1
Unknown Age	4	4	6	2	3	......	5	1	......	3	1	2	31
Unknown Age and Sex	208	175	162	175	175	3	9	......	14	37	25	10	993
Total	365	312	307	294	274	75	37	11	26	129	58	32	1922

CASES OF **DIPHTHERIA** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDER YEAR 1918 BY AGE GROUPS AND MONTHS

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	6	1	7	9	5	2	......	3	5	2	6	5	51
1- 4	50	41	62	47	42	36	28	38	38	50	42	63	537
Under 5	56	42	69	56	47	38	28	41	43	52	48	68	588
5- 9	58	35	49	58	79	59	60	51	84	105	70	88	796
10-14	40	27	52	54	59	50	40	40	64	74	47	60	607
15-19	21	23	40	45	26	34	25	23	27	40	33	32	369
20-24	23	17	27	41	37	20	12	19	12	28	37	31	304
25-34	47	30	39	39	32	30	21	19	19	27	27	34	364
35-44	15	12	19	22	25	11	11	15	8	16	14	12	180
45-54	9	2	7	8	9	2	6	4	2	8	6	5	66
55-64	2	2	4	1	2	......	2	1	......	1	2	4	21
65 and over	1	1	2	1	1	......	1	......	......	1	1	......	9
Unknown	43	29	25	26	58	16	21	22	30	29	33	38	370
Total	315	220	333	351	373	260	227	235	289	381	318	372	3674

34 cases reported by Death Certificate only included

CASES OF **DIPHTHERIA** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1918 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	51	42	9	17 6	35	31	4	11.4	16	11	5	31.3
1- 4	537	455	82	15.3	301	247	54	17.9	236	208	28	11.9
Under 5	588	497	91	15.5	336	278	58	17.3	252	219	33	13.1
5- 9	796	713	83	10 4	402	355	47	11.7	394	358	36	9.1
10-14	607	574	33	5.5	282	266	16	5.7	325	308	17	5.2
15-19	369	353	16	4.3	153	148	5	3.3	216	205	11	5.1
20-24	304	291	13	4 3	90	86	4	4 4	214	205	9	4.2
25-34	364	338	26	7.1	123	111	12	9.7	241	227	14	5.8
35-44	180	172	8	4.4	79	74	5	6.3	101	98	3	3.0
45-54	66	59	7	10.6	30	24	6	20.0	36	35	1	2.8
55-64	21	19	2	9.5	10	8	2	20.0	11	11	......	......
65 and over	9	9	......	......	6	6	......	......	3	3	......	......
Age unknown	370	367	1	.3	219	217	......	......	151	150	1	.7
Total	3674	3392	280	7.6	1730	1573	155	9.0	1944	1819	125	6.4

CASES OF **MEASLES** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDER YEAR 1918 BY AGE GROUPS AND MONTHS

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	14	6	8	15	14	27	17	3	2	3	......	1	110
1- 4	61	37	55	82	157	226	118	26	10	3	6	16	797
Under 5	75	43	63	97	171	253	135	29	12	6	6	17	907
5- 9	138	154	143	106	295	255	92	18	5	5	5	5	1221
10-14	91	101	138	57	78	52	13	3	2	1	4	......	540
15-19	63	101	139	22	34	17	12	2	1	2	1	......	394
20-24	56	86	64	26	28	20	8	3	......	3	2	1	297
25-34	35	61	61	43	22	16	5	3	2	1	......	......	249
35-44	4	17	10	9	6	1	......	......	...	2	1	......	50
45-54	2	4	3	2	......	......	...	......	...	......	......	......	11
55-64	......	......	......	......	......	1	2	......	...	......	......	......	3
65 and over	......	......	......	......	......	......	......	......	......	......	......	......	......
Unknown	7	37	75	61	27	118	56	7	1	......	......	5	394
Total	471	604	696	423	661	733	323	65	23	20	19	28	4066

55 cases reported by Death Certificate only included.

CASES OF **MEASLES** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1918 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	110	82	28	25.4	66	49	17	25.7	44	33	11	25 0
1- 4	797	756	41	5.1	378	362	16	4.2	419	394	25	6.0
Under 5	907	838	69	7.6	444	411	33	7.4	463	427	36	7.8
5- 9	1221	1214	7	.6	569	568	1	.2	652	646	6	.9
10-14	540	536	4	.7	231	230	1	.4	309	306		1.0
15-19	394	391	3	.8	162	160	2	1.2	232	231	1	.4
20-24	297	294	3	1.0	113	112	1	.9	184	182	2	1.1
25-34	249	248	1	.4	89	88	1	1.1	160	160	.....	.....
35-44	50	50	.....	.....	18	18	.....	.....	32	32	.....	.....
45-54	11	11	.....	.....	5	5	.....	.....	6	6	.....	.....
55-64	3	3	.....	.....	1	1	.....	.....	2	2	.....	.....
65 and over	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unknown	394	394	.....	.....	275	275	.....	.....	119	119	.....	.....
Total	4066	3979	87	2 1	1907	1868	39	2 0	2159	2111	48	2 2

CASES OF **SCARLET FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDER YEAR 1918 BY AGE GROUPS AND MONTHS

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	4	3	6	3	3	2	2	.....	2	.....	.....	2	27
1- 4	49	83	113	77	87	52	30	20	17	20	10	23	581
Under 5	53	86	119	81	90	54	32	20	19	20	10	25	609
5- 9	96	144	225	165	181	114	48	41	41	28	21	33	1137
10-14	73	113	201	129	127	83	37	19	23	20	7	29	861
15-19	47	108	116	60	62	33	12	6	5	13	5	21	488
20-24	31	33	51	41	44	8	6	4	3	4	2	8	235
25-34	16	38	26	22	32	9	5	1	4	4	3	7	167
35-44	7	8	12	13	2	2	.....	.....	1	2	2	2	51
45-54	2	4	1	1	3	1	.....	.....	1	1	.....	.....	14
55-64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
65 and over	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1
Age unknown	6	17	82	57	38	26	4	2	1	3	2	7	245
Sex unknown	.....	1	.....	3	2	9	.....	.....	2	2		.....	19
Total	331	552	833	573	581	339	144	93	100	97	52	132	3327

37 cases reported only by Death Certificate included.

CASES OF **SCARLET FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1918 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	28	23	5	17.9	9	7	2	22.2	19	16	3	15.8
1- 4	581	526	55	9.5	298	268	30	10.1	283	258	25	8.8
Under 5	609	549	60	9.9	307	275	32	10.4	302	274	28	9.3
5- 9	1137	1104	33	2.9	537	524	13	2.4	600	580	20	3.3
10-14	861	832	29	3.4	387	371	16	4.1	474	461	13	2.7
15-19	488	479	9	1.8	194	190	4	2.1	294	289	5	1.7
20-24	235	220	15	6.4	91	85	6	6.6	144	135	9	6.2
25-34	167	162	5	3.0	77	74	3	3.9	90	88	2	2.2
35-44	51	48	3	5.9	24	22	2	8.3	27	26	1	3.7
45-54	14	14	......	.....	8	8	......	.....	6	6	......	......
55-64	....	......	......	.....	......	......	......	.....	......	......	......	......
65 and over	1	1	......	....	......	......	......	.....	1	1	......	......
Age unknown	245	245	......	.....	161	161	......	.....	84	84	......	......
Sex unknown	19	18	......	.....	......	......	......	.....	......	......	......	......
Total	3827	3672	154	4.0	1786	1710	76	4.2	2022	1944	78	3.9

CASES OF **TUBERCULOSIS** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1918 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	2	6	1	3	3	......	......	......	2	......	......	2	19
1- 4	5	7	4	4	13	5	3	9	7	2	1	1	61
Under 5	7	13	5	7	16	5	3	9	9	2	1	3	80
5- 9	4	10	13	7	12	7	10	5	3	1	1	3	76
10-14	11	15	23	12	15	10	10	11	18	3	2	9	139
15-19	17	27	39	30	31	24	26	23	21	19	13	12	282
20-24	39	30	67	62	64	38	57	41	38	44	25	31	536
25-34	111	78	114	107	132	100	70	110	77	59	51	74	1083
35-44	55	48	62	46	75	51	55	57	47	35	33	48	612
45-54	37	30	39	37	22	42	16	35	33	25	22	23	361
55-64	14	13	24	25	18	13	19	17	18	11	10	11	193
65 and over	5	9	7	15	10	5	7	6	7	2	7	8	88
Unknown	115	6	19	26	20	41	52	34	59	22	11	53	458
Total	415	279	412	374	415	336	325	348	330	223	176	275	3908*

*983 cases reported by Death Certificate only **not** included. Total cases 4891.

CASES OF **TUBERCULOSIS** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1918 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatal-ity Rate	Total	Non Fatal	Fatal	Fatal-ity Rate	Total	Non Fatal	Fatal	Fatal-ity Rate
Under 1	52	......	52	100.0	29	......	29	100.0	23	......	23	100.0
1- 4	128	28	100	78.1	75	18	57	76 0	53	10	43	81.1
Under 5	180	28	152	84.4	104	18	86	82.7	76	10	66	86.8
5- 9	116	57	59	50.9	54	27	27	50.0	62	30	32	51.6
10-14	176	106	70	39.8	67	47	20	29.8	109	59	50	45.9
15-19	356	186	170	47.8	153	93	60	39.2	203	93	110	54.2
20-24	637	296	341	53.5	296	134	162	54.7	341	162	179	52.5
25-34	1297	596	701	54.1	691	287	404	58.5	606	309	297	49.0
35-44	766	315	451	58.9	466	173	293	62.9	300	142	158	52.7
45-54	476	197	279	58.6	300	116	184	61.3	176	81	95	54.0
55-64	277	94	183	66.1	171	41	130	76.0	106	53	53	50.0
65 and over	146	28	118	80.8	95	16	79	83.2	51	12	39	76.5
Unknown	464	445	19	4.1	330	321	9	2.7	134	124	10	74.7
Total	4891	2348	2543	51.9	2727	1273	1454	53.3	2161	1075	1089	50.3

CASES OF **TYPHOID FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1918 BY AGE GROUPS AND MONTHS

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	......	......	......	1	......	......	......	......	......	......	......	......	1
1- 4	4	3	4	3	......	1	4	4	3	3	......	......	29
Under 5	4	3	4	4	......	1	4	4	3	3	......	......	30
5- 9	7	3	4	4	4	2	5	5	7	5	......	......	46
10-14	4	6	4	6	5	3	9	14	10	8	......	......	69
15-19	5	10	10	7	1	7	6	15	15	13	1	1	91
20-24	4	9	11	10	3	3	4	12	8	14	3	4	85
25-34	11	16	23	14	14	5	8	23	24	16	7	7	168
35-44	6	7	12	10	5	2	9	7	10	3	4	1	76
45-54	1	6	11	7	3	2	1	7	12	2	......	1	53
55-64	......	1	1	1	1	3	3	......	......	1	......	......	11
65 and over	1	......	......	1	2	......	1	1	1	......	......	......	7
Unknown	......	......	......	1	......	......	1	2	3	......	1	......	8
Total	43	61	80	65	38	28	51	90	93	65	16	14	644

24 cases reported only by Death Certificate included.

CASES OF **TYPHOID FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1918 BY AGE GROUPS, SEX AND TERMINATION

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	1	1	......	.....	......	......	......	.....	1	1	......	......
1- 4	29	28	1	3.4	12	12	......	.....	17	16	1	5.9
Under 5	30	29	1	3.3	12	12	......	....	18	17	1	5.6
5- 9	46	44	2	4.3	22	21	1	4.5	24	23	1	4.2
10-14	69	65	4	5.8	42	40	2	4 8	27	25	2	7.4
15-19	91	85	6	6.6	40	37	3	7.5	51	48	3	6.0
20-24	85	71	14	16.5	44	36	8	18.2	41	35	6	14.6
25-34	168	137	31	18 4	109	88	21	19.3	59	49	10	17.0
35-44	76	64	12	15.8	54	47	7	13.0	22	17	5	22.7
45-54	53	44	9	17.0	37	30	7	19.0	16	14	2	12.5
55-64	11	7	4	36.4	5	1	4	80.0	6	6	......	......
65 and over	7	3	4	57.1	3	......	3	100.0	4	3	1	25.0
Unknown	8	8	......	.....	5	5	......	.....	3	3	......	......
Total	644	557	87	13.5	373	317	56	15 0	271	240	31	11.4

CASES OF **WHOOPING COUGH** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1918 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	10	13	26	29	48	26	30	19	19	13	8	7	248
1- 4	45	60	84	167	85	82	62	44	33	31	16	10	719
Under 5	55	73	110	196	133	108	92	63	52	44	24	17	967
5- 9	68	118	96	188	116	60	47	13	26	25	6	2	765
10-14	3	5	5	15	8	2	......	2	5	8	......	......	53
15-19	2	......	1	3	2	......	1	......	......	......	......	......	9
20-24	......	......	1	......	......	......	......	......	......	......	......	......	1
25-34	......	......	5	......	2	......	3	......	......	......	......	......	10
35-44	......	......	......	......	......	......	......	......	......	......	......	......	......
45-54	1	......	......	......	......	......	......	......	......	......	......	......	1
55-64	......	......	......	......	......	......	......	1	......	......	......	......	1
Unknown Age	......	3	3	4	2	1	8	......	8	4	......	......	33
Unknown Sex	93	113	146	233	105	13	37	10	10	18	1	......	779
Total	222	312	367	639	368	184	188	89	101	99	31	19	2619

154 cases reported only by Death Certificate included.

CASES OF SMALLPOX REPORTED IN THE STATE OF MINNESOTA DURING THE YEAR 1918 BY COUNTIES, AGE GROUPS, AND VACCINATION CLASSIFICATION.

COUNTY	CLASS A				CLASS B		CLASSES C AND D				Age not given	Total
	Under 1 year	1-4	5-19	20 and over	7-19	20 and over	Under 1 year	1-4	5-19	20 and over		
Aitkin									1	2	1	4
Anoka									2	2		4
Becker												
Beltrami						1		1	8	11	3	24
Benton							1		1			2
Bigstone									1	1		2
Blue Earth						1			1	1		3
Brown										2		2
Carlton						1				3		4
Carver								1	4	2	7	14
Cass								6	13	9	13	41
Chippewa								2	4	3		9
Chisago						1				4	1	6
Clay						2			5	4		11
Clearwater							1		1	6		8
Cook												
Cottonwood										3		3
Crow Wing						4	1	4	38	24	2	73
Dakota						2		2	3	2	19	28
Dodge									5	7		12
Douglas						1	2	3	10	9		25
Faribault									10	8	1	19
Fillmore						3			7	12	1	23
Freeborn						2		2	17	11	3	35
Goodhue			1			4	3	8	92	35	3	146
Grant										1		1
Hennepin (outside Mpls.)						2	1	3	15	23	3	47
MINNEAPOLIS							9	18	207	284	5	523
Houston								2	12	9		23
Hubbard										4		4
Isanti										2		2
Itasca						2				1		3
Jackson							1		4	4		9
Kanabec			1						3	1	1	6
Kandiyohi									5	2		7
Kittson			1			1	1	2	26	23		54
Koochiching										3		3
Lac QuiP arle									1	2		3
Lake												
Le Sueur										1	1	2
Lincoln									2			2
Lyon									5	3		8
McLeod						2		1	5	4	1	13
Mahnomen										1	3	4
Marshall									9	6		15
Martin						1			2	5		8
Meeker			5		2	5		1	4	9	1	27
Mille Lacs									3	6		9
Morrison									1		1	2
Mower				1		4	1	2	29	29		66
Murray										5		5
Nicollet			2						2	5		9
Nobles									1			1
Norman						3				3		6
Olmsted						2			8	25		35
Ottertail					1				5	6	1	13
Pennington										3		3
Pine						2		2	24	15	2	45
Pipestone				1		3		3	7	9	1	24
Polk					1	1			2	6	2	12
Pope												
Ramsey (outside St. Paul)									1			1
ST. PAUL							4	28	215	128	8	383
Red Lake												
Redwood										2		2
Renville								5	4	12		21
Rice					1	7			10	11		29
Rock					1			1	10	11		23
Roseau								2	4	12	1	19
St. Louis (outside Duluth)			3			1		4	25	21		54
DULUTH									7	26		33
Scott						1		2	5	2		10

CASES OF **SMALLPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE YEAR 1918 BY COUNTIES, AGE GROUPS, AND VACCINATION CLASSIFICATION.

COUNTY	CLASS A				CLASS B		CLASSES C AND D				Age not given	Total
	Under 1 year	1–4	5–19	20 and over	7–19	20 and over	Under 1 year	1–4	5–19	20 and over		
Sherburne	......	......	......	......	......	......	......	......	......	1	......	1
Sibley	......	......	......	......	......	......	......	......	1	2	......	3
Stearns	......	......	......	......	1	1	......	3	19	13	3	40
Steele	......	......	......	......	......	......	......	......	......	......	......	......
Stevens	......	......	......	......	......	......	......	......	2	2	2	6
Swift	......	......	......	......	......	......	......	......	......	......	......	......
Todd	......	......	......	......	......	......	......	3	4	5	......	12
Traverse	......	......	......	......	......	......	......	......	4	2	......	6
Wabasha	......	......	......	......	......	......	1	......	5	2	1	9
Wadena	......	......	......	......	......	1	......	......	5	3	......	9
Waseca	......	......	......	......	......	......	......	......	......	......	......	......
Washington	......	......	......	......	......	1	......	1	2	5	......	9
Watonwan	......	......	......	......	......	......	......	......	7	7	4	18
Wilkin	......	......	......	......	......	......	......	2	11	4	4	21
Winona	......	......	......	......	2	......	......	1	12	2	2	19
Wright	......	......	......	......	......	2	1	7	35	12	4	61
Yellow Medicine	......	......	......	......	......	......	......	......	1	2	......	3
Fort Snelling	......	......	......	......	......	......	......	......	......	1	......	1
Total	......	......	13	2	9	64	26	122	994	949	105	2285

CASES AND DEATHS COMMUNICABLE DISEASES REPORTED IN THE STATE DURING THE CALENDAR YEAR 1919.

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Actinomycosis	Cases	....	....	....	1	....	1	....	....	....	....	....	....	2
	Deaths	....	....	....	1	....	1	....	....	....	....	....	....	2
Anthrax	Cases	....	....	....	....	....	....	....	....	....	....	1	....	1
	Deaths	....	....	....	....	....	....	....	....	....	....	1	....	1
Chickenpox	Cases	84	98	153	181	185	181	24	5	22	122	310	346	1,711
	Deaths	....	....	....	1	2	1	1	....	....	....	....	....	5
Diphtheria	Cases	484	344	316	293	416	294	253	242	378	614	522	385	4,511
	Deaths	31	24	28	24	40	17	24	21	23	22	26	22	302
Encephalitis	Cases	....	6	3	5	2	1	2	1	1	1	9	11	42
	Deaths	....	....	....	5	1	2	2	....	2	2	7	2	23
Influenza	Cases	7,272	1,758	2,825	742	145	8	17	21	24	41	47	39	12,945
	Deaths	1,012	431	609	295	109	38	17	19	14	8	5	22	2,579
Malaria	Cases	....	1	....	....	....	....	....	1	1	....	2	....	5
	Deaths	....	1	....	....	....	....	....	1	....	....	....	....	2
Measles	Cases	56	134	373	715	1,103	854	207	34	45	225	246	477	4,469
	Deaths	3	2	16	17	27	9	8	4	....	1	3	11	101
Epidemic Meningitis	Cases	2	7	4	6	5	6	8	2	2	6	3	5	56
	Deaths	3	6	3	3	4	2	3	....	1	1	1	3	30
Pellagra	Cases	....	1	....	....	....	....	1	1	....	....	....	....	3
	Deaths	....	1	....	....	....	....	....	1	....	....	....	....	2
Pneumonia	Cases	164	142	212	190	111	58	34	48	45	98	120	203	1,425
	Deaths	164	142	212	190	111	58	34	46	43	96	116	201	1,416
Poliomyelitis	Cases	2	1	1	1	3	1	22	24	17	9	3	1	85
	Deaths	1	1	1	1	....	1	2	4	1	1	2	1	16
Rabies	Cases	....	....	....	....	....	....	....	....	....	....	....	....	....
	Deaths	....	....	....	....	....	....	....	....	....	....	....	....	....
Scarlet Fever	Cases	206	336	410	322	280	180	63	65	122	222	216	231	2,656
	Deaths	10	12	16	15	13	4	2	3	5	2	6	8	96
Smallpox	Cases	154	285	209	211	293	287	135	72	51	112	237	402	2,448
	Deaths	....	1	3	....	....	3	1	1	....	....	....	....	9
Tetanus	Cases	....	1	1	2	2	....	3	5	4	2	4	....	24
	Deaths	....	1	1	2	2	....	3	5	4	2	4	....	24
Tuberculosis	Cases	432	406	456	455	488	467	430	407	339	411	373	1,283*	5,997*
	Deaths	214	202	220	230	229	192	192	158	138	166	120	183	2,244
Typhoid Fever	Cases	24	23	52	43	39	36	42	73	75	89	77	69	642
	Deaths	4	4	3	5	6	5	4	13	10	11	5	8	78
Whooping Cough	Cases	11	17	13	19	26	14	32	17	55	57	53	47	361
	Deaths	9	4	7	10	12	3	10	7	5	7	11	10	98

*includes 855 men between ages 19-31 rejected by Draft Board.

CASES OF **CHICKENPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	......	2	2	7	5	7	......	......	......	2	4	7	36
1	2	2	6	3	5	6	2	......	......	......	6	4	36
2	3	2	7	4	6	6	1	......	......	3	4	4	40
3	2	3	5	4	2	3	2	1	......	2	7	16	47
4	2	3	6	4	7	3	4	1	......	2	3	18	53
Under 5	9	12	26	22	25	25	9	2	......	9	24	49	212
5– 9	7	13	55	51	60	45	5	3	3	47	123	110	522
10–14	2	7	14	14	14	21	3	......	4	12	21	43	155
15–19	......	4	1	1	4	1	1	......	......	3	5	8	28
20–24	1	2	2	2	2	3	......	......	......	2	3	2	19
25–34	......	1	3	3	2	3	1	......	......	......	3	6	22
35–44	......	......	1	......	2	1	......	......	......	......	......	2	6
45–54	......	......	1	1	......	......	......	......	......	......	......	......	2
55–64	......	......	......	......	......	......	......	......	......	......	......	......	......
65 and over	......	......	......	1	......	......	......	......	......	......	......	......	1
Unknown	65	59	50	86	76	82	5	......	15	49	131	126	744
Total	84	98	153	181	185	181	24	5	22	122	310	346	1711

CASES OF **DIPHTHERIA** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	4	6	6	17	5	2	3	3	13	2	7	3	71
1	8	7	12	10	8	5	3	4	6	6	7	5	81
2	11	18	11	9	14	6	10	9	4	14	19	13	138
3	16	11	16	12	12	6	7	10	8	16	24	17	155
4	21	15	11	13	16	11	12	12	17	20	24	13	185
Total under 5	60	57	56	61	55	30	35	38	48	58	81	51	630
5– 9	100	70	72	49	110	55	76	64	123	197	131	88	1135
10–14	96	45	37	33	57	49	38	43	76	156	101	72	803
15–19	65	26	24	47	50	39	22	22	33	73	55	44	500
20–24	42	44	32	27	48	24	24	19	22	37	32	23	374
25–34	33	32	31	28	39	26	28	20	27	39	40	32	375
35–44	16	23	11	16	21	15	16	7	10	21	29	17	202
45–54	8	14	6	4	5	3	3	4	4	9	7	6	73
55–64	4	3	3	2	4	1	1	1	3	......	1	......	23
65 and over	......	......	1	......	1	1	......	......	1	1	......	3	8
Unknown	60	30	43	26	26	51	10	24	31	23	45	49	418
Total	484	344	316	293	416	294	253	242	378	614	522	385	4541

81 cases reported by death certificate only included.

CASES OF **DIPHTHERIA** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	71	61	10	14.1	36	31	5	13.9	35	30	5	14.3
1	81	48	33	40.7	51	32	19	37.2	30	16	14	46.7
2	138	112	26	18.8	85	71	14	16.4	53	41	12	22.6
3	155	130	25	16.1	87	71	16	18.4	68	59	9	13.2
4	185	166	19	10.3	96	87	9	9.4	89	79	10	12.1
Total under 5	630	517	113	17.9	355	292	63	17.7	275	225	50	18.2
5–9	1135	1055	80	7.9	577	542	35	6.1	558	513	45	8.1
10–14	803	761	42	5.2	400	382	18	4.5	403	379	24	5.9
15–19	500	481	19	3.8	226	216	10	4.5	274	265	9	3.3
20–24	374	359	15	4.3	122	118	4	3.4	252	241	11	4.4
25–34	375	355	20	5.4	136	125	11	8.1	239	230	9	3.8
35–44	202	194	8	4.0	74	71	3	4.1	128	123	5	3.9
45–54	73	70	3	4.1	32	29	3	9.4	41	41	......	......
55–64	23	22	1	4.3	9	8	1	11.1	14	14	......	......
65 and over	8	7	1	12.5	2	1	1	50.0	6	6	......	......
Unknown	418	418	......	.....	220	220	......	.....	198	198	......	......
Total	4541	4239	302	6.6	2153	2004	149	6.9	2388	2235	153	6.5

CASES OF **MEASLES** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	4	1	7	16	20	16	3	5	......	7	8	7	94
1	5	5	18	52	60	49	25	4	......	11	10	26	265
2	4	7	19	56	82	62	25	1	3	21	30	28	338
3	3	9	18	57	62	73	34	5	1	15	19	22	318
4	9	6	22	56	98	71	22	3	3	17	13	35	355
Total under 5	25	28	84	237	322	271	106	18	7	71	80	118	1370
5–9	17	56	172	336	565	456	59	8	28	99	115	152	2063
10–14	5	19	39	53	144	44	15	2	2	17	24	28	392
15–19	1	21	45	24	22	8	9	4	4	11	6	12	167
20–24	4	3	10	10	17	16	7	1	3	1	5	14	91
25–34	1	......	7	14	14	5	4	......	......	4	4	4	57
35–44	......	1	3	1	3	6	......	1	......	......	......	4	19
45–54	......	......	1	1	1	1	......	......	......	1	......	1	6
55–64	......	......	......	......	......	......	......	......	......	......	......	......	......
65 and over	......	......	......	......	......	......	......	......	......	......	......	......	......
Unknown	3	6	12	39	15	47	4	..	1	21	12	144	304
Total	56	134	373	715	1103	854	207	34	45	225	246	477	4469

45 cases reported only by death certificate included.

CASES OF **MEASLES** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	94	76	18	19.1	52	42	10	19.2	42	34	8	19.0
1	265	239	26	9.8	156	140	16	10.3	109	99	10	9.2
2	338	324	14	4.1	179	173	6	3.4	159	151	8	5.0
3	318	312	6	1.9	147	145	2	1.4	171	167	4	2.3
4	355	349	6	1.7	190	186	4	2.1	165	163	2	1.2
Total under 5	1370	1300	70	5.1	724	686	38	5.2	646	614	32	5.0
5- 9	2063	2047	16	.8	1007	1000	7	.7	1056	1047	9	.9
10-14	392	387	5	1.3	229	228	1	.4	163	159	4	2.5
15-19	167	162	5	3.0	82	80	2	2.4	85	82	3	3.5
20-24	91	90	1	1.1	42	41	1	2.4	49	49	......	......
25-34	57	55	2	3.5	16	15	1	6.2	41	40	1	2.4
35-44	19	18	1	5.3	12	12	......	.....	7	6	1	14.3
45-54	6	6	......	......	3	3	......	.....	3	3	......	......
55-64	.....	......	......	.....	.....	......	......	.....	......	......	......	......
65 and over	.....	......	......	......	.....	......	......	.....	.....	......	......	......
Unknown	304	303	1	.3	254	253	1	.4	50	50	......	......
Total	4469	4368	101	2.3	2369	2318	51	2.2	2100	2050	50	2.4

CASES OF **SCARLET FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	2	5	4	2	3	1	1	1	2	4	1	1	27
1	6	9	6	6	3	3	2	......	5	4	4	4	52
2	9	11	7	17	9	7	2	1	4	5	4	10	86
3	13	17	11	10	14	8	4	4	8	14	11	13	127
4	11	20	33	16	16	11	1	6	3	7	20	24	168
Total under 5	41	62	61	51	45	30	10	12	22	33	40	52	460
5- 9	68	89	125	99	88	56	22	22	53	105	73	69	869
10-14	35	69	73	56	68	42	10	16	28	36	35	37	505
15-19	25	46	49	51	29	21	6	8	5	15	18	21	294
20-24	14	39	43	25	26	11	9	3	3	7	9	16	205
25-34	11	8	18	21	15	7	3	2	4	5	6	9	109
35-44	6	5	5	8	4	3	......	.....	1	4	2	3	41
45-54	1	......	3	1	2	......	......	.....	......	......	2	1	10
55-64	......	......	......	......	......	......	......	......	......	......	......	1	1
65 and over	.....	......	......	......	......	......	......	......	......	......	......	......	......
Unknown	5	18	33	10	4	10	3	2	6	16	31	25	163
Total	206	336	410	322	280	180	63	65	122	222	216	234	2656

33 cases reported only by death certificate, included.

CASES OF **SCARLET FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	27	22	5	18.5	14	13	1	7.1	13	9	4	30.8
1	52	41	11	21.2	21	17	4	19.0	31	24	7	22.6
2	86	76	10	11.6	48	43	5	10.4	38	33	5	13.2
3	127	116	11	8.7	62	59	3	4.8	65	57	8	12.3
4	168	161	7	4.2	79	75	4	5.1	89	86	3	3.4
Total under 5	460	416	44	9.6	224	207	17	7.6	236	209	27	11.4
5- 9	869	845	24	2.8	382	372	10	2.6	487	473	14	2.9
10-14	505	495	10	2.0	232	227	5	2.2	273	268	5	1.8
15-19	294	284	10	3.4	127	122	5	3.9	167	162	5	3.0
20-24	205	200	5	2.4	74	73	1	1.4	131	127	4	3.1
25-34	109	107	2	1.8	34	34	......	.....	75	73	2	2.7
35-44	41	41	......	.....	20	20	......	.....	21	21	......	......
45-54	10	10	......	......	5	5	......	.....	5	5	......	......
55-64	1	......	1	100.0	......	......	......	.....	1	......	1	100.0
65 and over	......	......	......	.....	......	......	......	.....	......	......	......	......
Unknown	163	163	......	......	103	103	......	.....	60	60	......	......
Total	2657	2561	96	3.6	1201	1163	38	3.2	1456	1398	58	4.0

CASES OF **TUBERCULOSIS** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	2	......	3	1	2	1	......	2	2	......	......	1	14
1- 4	1	8	11	11	2	......	3	4	3	2	3	1	49
Under 5	3	8	14	12	4	1	3	6	5	2	3	2	63
5- 9	4	7	16	15	10	17	9	9	7	5	5	6	110
10-14	9	9	13	19	13	12	9	11	12	14	15	7	143
15-19	29	19	27	34	29	25	38	30	25	18	24	23	321
20-24	40	32	52	51	54	67	53	58	61	48	43	51	610
25-34	78	114	114	98	124	106	105	106	94	119	103	93	1254
35-44	47	56	54	51	54	59	54	50	62	55	64	61	667
45-54	30	28	29	27	45	43	37	32	26	33	21	25	376
55-64	19	23	18	23	17	24	21	15	13	16	14	15	218
65 and over	9	3	5	4	14	13	6	6	7	10	6	9	92
Unknown	72	24	21	22	35	28	15	23	24	17	28	38	347
Total	340	323	363	356	399	395	350	346	336	337	326	330	4201*

*941 cases reported by death certificate only **not** included.
*855 rejected by Draft Board **not** included, Total cases 5997.

CASES OF **TUBERCULOSIS** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	32	3	29	90.6	13	1	12	92.3	19	2	17	89.5
1- 4	98	23	75	76.5	49	10	39	79.6	49	13	36	74.9
Total under 5	130	26	104	80.0	62	11	51	82.2	68	15	53	78.0
5- 9	131	94	37	28.2	67	44	23	34.3	64	50	14	21.9
10–14	164	127	37	22.6	66	55	11	16.7	98	72	26	26.5
15–19	401	208	193	48.1	147	77	70	47.6	254	131	123	48.8
20–24	712	434	278	39.0	333	207	126	37.9	379	227	152	40.1
25–34	1471	855	616	41.2	765	451	314	41.1	706	404	302	42.8
35–44	812	415	397	48.9	472	233	239	50.6	340	182	158	46.5
45–54	494	232	262	53.0	314	136	178	56.7	180	96	84	41.1
55–64	310	115	195	62.9	194	64	130	67.0	116	51	65	56.9
65 and over	158	49	109	69.0	99	33	66	65.6	59	16	43	72.9
Unknown	359	343	16	4.5	252	238	14	5.5	107	105	2	1.9
Total	5142*	2898	2244	43.6	2771	1549	1222	44.1	2371	1349	1022	43.1

*855 rejected by draft board not included. Total cases 5997.

CASES OF **TYPHOID FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	......	......	......	......	......	......	......	......	......	......	......	......	......
1	1	......	1	......	......	......	......	......	1	......	1	......	4
2	......	1	2	......	1	......	1	......	......	1	1	1	8
3	......	......	1	1	1	......	......	2	......	......	3	5	13
4	1	......	1	......	1	2	1	......	2	3	2	1	14
Total under 5	2	1	5	1	3	2	2	2	3	4	7	7	39
5- 9	2	2	8	3	5	6	5	4	6	7	2	4	54
10–14	2	3	2	3	6	......	7	9	4	11	5	6	58
15–19	2	3	2	9	5	3	6	9	16	4	5	4	68
20–24	1	1	2	5	9	5	6	13	8	17	7	14	88
25–34	10	7	16	10	4	10	10	19	20	21	19	13	160
35–44	3	2	6	2	4	6	4	5	7	15	11	10	75
45–54	2	2	6	3	2	......	1	5	8	5	7	4	45
55–64	......	......	3	1	......	2	......	5	1	3	1	3	19
65 and over	......	......	......	......	......	......	......	1	......	......	3	2	6
Unknown	......	2	2	6	1	1	1	1	2	2	10	2	30
Total	24	23	52	43	39	36	42	73	75	89	77	69	642

23 cases reported only by death certificate included.

CASES OF **TYPHOID FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	......	......	......	......	......	......	......	......	......	......	......	......
1	4	4	......	......	2	2	......	......	2	2	......	......
2	8	8	......	......	2	2	......	......	6	6	......	......
3	13	12	1	7.7	1	1	......	......	12	11	1	8.3
4	14	14	......	......	9	9	......	......	5	5	......	......
Under 5	39	38	1	2.6	14	14	......	......	25	24	1	4.0
5– 9	54	53	1	1.9	27	27	......	......	27	26	1	3.7
10–14	58	53	5	8.6	26	23	3	11.5	32	30	2	6.2
15–19	68	56	12	17.6	27	18	9	33.3	41	38	3	7.3
20–24	88	71	17	19.3	47	37	10	21.3	41	34	7	17.1
25–34	160	137	23	14.4	90	78	12	13.3	70	59	11	15.7
35–44	75	66	9	12.0	51	45	6	11.8	24	21	3	12.5
45–54	45	43	2	4.4	30	28	2	6.6	15	15	......	......
55–64	19	14	5	26.3	13	9	4	30.8	6	5	1	16.6
65 and over	6	4	2	33.3	3	1	2	66.6	3	3	......	......
Unknown	30	29	1	3.3	23	22	1	4.3	7	7	......	......
Total	642	564	78	12 1	351	302	49	14.0	291	262	29	10.0

CASES OF **WHOOPING COUGH** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1919 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	4	4	4	4	4	1	5	6	6	6	7	8	59
1	3	......	2	5	5	1	6	......	......	4	3	2	31
2	......	1	2	2	2	4	3	1	3	5	2	......	25
3	......	......	......	......	3	1	4	1	3	3	4	......	19
4	......	......	......	1	2	2	......	......	6	7	3	2	23
Under 5	7	5	8	12	16	9	18	8	18	25	19	12	157
5– 9	1	1	2	1	3	......	5	4	2	15	12	15	61
10–14	......	......	......	......	1	......	......	......	......	2	3	......	6
15–19	......	......	......	......	......	......	......	......	2	......	3	......	5
20–24	......	......	......	......	......	......	......	......	......	......	......	......	......
25–34	......	......	......	......	......	......	1	......	......	......	......	......	1
35–44	......	......	......	......	......	......	......	......	......	......	......	1	1
45–54	......	......	......	......	......	......	......	......	......	......	......	......	......
55–64	......	......	......	......	......	......	......	......	......	......	......	......	......
65 and over	......	......	......	......	......	......	......	......	......	......	......	......	......
Unknown	3	11	3	6	6	5	8	5	33	15	16	19	130
Total	11	17	13	19	26	14	32	17	55	57	53	47	361

CASES OF **SMALLPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE YEAR 1919 BY COUNTIES, AGE GROUPS, AND VACCINATION CLASSIFICATION.

COUNTY	CLASS A				CLASS B		CLASSES C AND D				Age not given	Total
	Under 1 year	1–4	5–19	20 and over	7–19	20 and over	Under 1 year	1–4	5–19	20 and over		
Aitkin												
Anoka						1		1	2	1	1	6
Becker							2	3	45	15	2	67
Beltrami									1			1
Benton									2	2		4
Bigstone						1		3	11	6		1
Blue Earth									1	5		6
Brown									1	1		2
Carlton									1	1		2
Carver						1						1
Cass									1	5		6
Chippewa									1	1		2
Chisago												
Clay						1		3	2	5		11
Clearwater							1	1	10	7	1	20
Cook												
Cottonwood								1		1		2
Crow Wing				2				1		3		6
Dakota							1		8	2	1	12
Dodge						4			3			7
Douglas								8	51	16	1	76
Faribault						1		2	13	19	5	40
Fillmore						2			1	2		5
Freeborn									1	2		3
Goodhue									20	1	2	23
Grant										6	3	9
Hennepin (outside Mpls.)			2			1		1	21	4		29
MINNEAPOLIS											560*	560
Houston						1			1	11		13
Hubbard						2		5	32	16		55
Isanti					2	1			14	7		24
Itasca									1	1		2
Jackson										3		3
Kanabec						3	2	4	42	23	3	77
Kandiyohi									1	1		2
Kittson												
Koochiching				2								2
Lac Qui Parle									1	1		2
Lake									3			3
Le Sueur										1	9	10
Lincoln								2		2		4
Lyon									7	2		9
McLeod			1									1
Mahnomen									1			1
Marshall												
Martin										5		5
Meeker									2	4	1	7
Mille Lacs										1		1
Morrison										1		1
Mower								2	2	5		9
Murray								1	2		1	4
Nicollet										1	1	2
Nobles						1				1		2
Norman			5			3			4	7	65	84
Olmsted								2	13	15	2	32
Ottertail						3	1	6	43	18	5	76
Pennington										2		2
Pine										1		1
Pipestone									1			1
Polk					1				9	4		14
Pope										1		1
Ramsey (outside St. Paul)									10	3	4	17
ST. PAUL							5	40	291	186		522
Red Lake												
Redwood						2				1		3
Renville												
Rice			2					1	10	12		25
Rock									9	9		18
Roseau												
St. Louis (outside Duluth)						1		1	3	5		10
DULUTH				3	1	4	1	6	44	41		100
Scott							1	2	20	13	1	37

CASES OF **SMALLPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE YEAR 1919 BY COUNTIES, AGE GROUPS, AND VACCINATION CLASSIFICATION.—Continued.

COUNTY	CLASS A				CLASS B		CLASSES C AND D				Age not given	Total
	Under 1 year	1–4	5–19	20 and over	7–19	20 and over	Under 1 year	1–4	5–19	20 and over		
Sherburne						2	1	1	4	2	1	11
Sibley												
Stearns			1			2		4	61	44	3	115
Steele							1	1	15	2		19
Stevens												
Swift												
Todd			2			4	1	2	37	18	1	65
Traverse							1	2	18	11		32
Wabasha			1					1	14	21		37
Wadena										3		3
Waseca										1		1
Washington						2		1	26	12	1	42
Watonwan												
Wilkin									2	1	1	4
Winona						1		5	1	3		10
Wright									4	1	1	6
Yellow Medicine												
Total			14	7	4	44	18	113	944	628	676	2448

*Age not given Class A 7
" B 60
" C&D 493

CASES AND DEATHS COMMUNICABLE DISEASES REPORTED IN THE STATE DURING THE CALENDAR YEAR 1920.

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Actinomycosis	Cases				1					1			1	3
	Deaths				1					1				2
Anthrax	Cases	1		1		1	1		2				1	7
	Deaths			1			1		1					3
Chickenpox	Cases	217	195	161	133	138	173	61	28	30	79	163	378	1,756
	Deaths	2		1		3								6
Diphtheria	Cases	324	266	253	229	228	178	221	276	271	406	505	459	3,616
	Deaths	26	19	19	16	19	14	19	19	15	27	29	21	243
Encephalitis	Cases	22	21	21	11	6	1	6	3	1	1	2		95
	Deaths	6	5	14	5	4		4	4			2		44
Influenza	Cases	7,277	24,665	2,476	130	87	19	10	9	5	16	9	17	34,720
	Deaths	303	1,489	249	66	34	19	8	9	3	8	4	9	2,201
Malaria	Cases									1				1
	Deaths													
Measles	Cases	746	822	1,133	1,423	2,013	1,044	233	74	9	23	35	118	7,673
	Deaths	19	31	19	20	35	21	7	1			2	4	159
Epidemic Meningitis	Cases	8	10	4	8	3	2	1	1	1	5	6	4	53
	Deaths	4	1	6	2	2	2				3	2	4	26
Ophthalmia Neonatorum	Cases	1			2			1		3	1	1	2	11
	Deaths													
Pellagra	Cases					1		1						2
	Deaths					1								1
Pneumonia	Cases	251	306	141	182	183	96	46	45	43	64	145	150	1,652
	Deaths	230	278	136	143	138	87	41	41	43	59	136	138	1,506
Poliomyelitis	Cases	2	1	1	1	2	1	5	21	20	15	10	1	80
	Deaths		1						6	5	4	2		18
Rabies	Cases													
	Deaths													
Scarlet Fever	Cases	326	276	338	352	289	177	140	110	149	268	362	542	3,329
	Deaths	15	16	8	14	11	5	5	2	6	9	11	15	117
Smallpox	Cases	653	442	501	455	556	414	227	182	173	402	882	1,446	6,333
	Deaths	2	3		2			1	1			3	3	15
Tetanus	Cases	1				2	4	2	5	3	4	4	1	26
	Deaths	1				2	4	2	5	3	4	3	1	25
Trachoma	Cases	2			2	1	4		2	37	3		55	106
	Deaths													
Tuberculosis	Cases	378	361	434	448	487	480	438	404	355	360	334	362	4,841
	Deaths	197	224	227	219	232	193	171	154	116	137	141	146	2,157
Typhoid Fever	Cases	28	22	45	24	40	36	93	91	78	110	61	56	684
	Deaths	4	7	4	2	4	3	8	8	9	10	4	8	71
Whooping Cough	Cases	154	155	313	242	224	211	194	140	133	111	81	123	2,081
	Deaths	16	45	20	29	40	21	25	18	23	23	15	22	297

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	State	Minneapolis	St. Paul	Duluth	Total
Actinomycosis	3	....	....	....	3
Anthrax	7	....	....	....	7
Chickenpox	475	694	468	119	1,756
Diphtheria	1,854	649	938	175	3,616
Encephalitis	63	14	8	10	95
Erysipelas	74	83	40	28	225
Malaria	....	1	....	....	1
Measles	4,024	2,124	1,368	157	7,673
Meningitis	28	12	9	4	53
Ophthalmia Neonatorum	6	1	4	....	11
Pellagra	2	....	....	....	2
Poliomyelitis	59	8	12	1	80
Rabies	....	....	....	....	....
Scarlet Fever	1,647	1,008	471	203	3,329
Smallpox	3,308	2,177	624	224	6,333
Tetanus	23	2	1	....	26
Trachoma	95	1	10	....	106
Tuberculosis	3,058	1,170	502	111	4,841
Typhoid Fever	464	70	117	33	684
Typhus Fever	....	....	....	....	....
Whooping Cough	763	179	973	166	2,081

CASES OF **CHICKENPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	5	1	6	3	5	3	2	......	1	2	8	10	46
1	4	14	1	1	3	8	3	1	...	4	4	12	55
2	10	7	8	6	3	5	5	2	1	4	4	13	68
3	11	5	4	7	4	4	8	3	1	2	6	11	66
4	10	4	4	7	1	8	3	......	4	6	5	26	78
Under 5	40	31	23	24	16	28	21	6	7	18	27	72	313
5- 9	103	44	62	58	67	102	26	5	10	39	92	201	809
10-14	32	44	17	28	33	18	5	3	4	16	25	43	268
15-19	16	4	4	8	8	8	3	5	3	1	6	14	80
20-24	3	4	......	6	6	3	2	2	1	2	4	9	42
25-34	5	3	2	4	5	9	1	4	3	2	1	7	46
35-44	2	......	2	1	......	1	1	1	2	1	3	5	19
45-54	......	......	......	1	......	1	......	1	......	......	......	2	5
55-64	......	1	......	1	......	......	......	......	......	......	1	......	3
65 and over	......	......	......	......	1	......	......	......	......	......	......	1	2
Unknown	16	64	51	2	2	3	2	1	......	......	4	24	169
Total	217	195	161	133	138	173	61	28	30	79	163	378	1756

CASES OF **DIPHTHERIA** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	......	10	4	4	3	......	1	2	3	1	1	8	37
1	8	5	5	3	3	2	3	2	1	5	7	7	51
2	13	7	7	6	8	4	13	7	9	3	9	18	104
3	16	15	11	12	8	5	13	6	8	7	19	26	146
4	5	8	5	10	5	10	19	14	13	17	11	24	141
Under 5	42	45	32	35	27	21	49	31	34	33	47	83	479
5- 9	78	64	44	46	36	38	61	96	88	145	199	153	1048
10-14	67	31	36	33	40	22	30	46	67	105	89	71	637
15-19	37	37	30	25	27	19	24	15	26	36	45	37	358
20-24	28	34	17	19	24	26	10	22	14	22	28	27	271
25-34	25	22	32	26	23	22	15	30	23	28	39	36	321
35-44	20	10	17	15	19	13	10	11	7	16	25	21	184
45-54	4	4	5	6	13	3	4	10	4	8	8	7	76
55-64	4	......	1	1	2	1	1	2	1	5	3	1	22
65 and over	2	1	......	......	......	......	3	......	1	......	2	......	9
Unknown	17	18	39	23	17	13	14	13	6	8	20	23	211
Total	324	266	253	229	228	178	221	276	271	406	505	459	3616

40 cases reported by death certificate only included.

CASES OF **DIPHTHERIA** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	37	31	6	16.2	26	24	2	7.7	11	7	4	36.3
1	51	38	13	25.1	22	16	6	27.3	29	22	7	24.1
2	104	85	19	18.3	52	42	10	19.2	52	43	9	17.3
3	146	123	23	15.8	88	76	12	13.6	58	47	11	19.0
4	141	121	20	14.2	75	63	12	16.0	66	58	8	12.1
Under 5	479	398	81	16.9	263	221	42	16.0	216	177	39	18.1
5- 9	1048	971	77	7.3	532	494	38	7.1	516	477	39	7.6
10-14	637	605	32	5.0	303	288	15	4.9	334	317	17	5.1
15-19	358	348	10	2.8	142	136	6	4.2	216	212	4	1.9
20-24	271	261	10	3.7	92	89	3	3.3	179	172	7	3.9
25-34	321	310	11	3.4	102	96	6	5.9	219	214	5	2.3
35-44	184	170	14	7.6	62	53	9	14.5	122	117	5	4 1
45-54	76	71	5	6.6	31	30	1	3.2	45	41	4	8.9
55-64	22	20	2	9.1	6	5	1	16.7	16	15	1	6.2
65 and over	9	8	1	11.1	5	4	1	20.0	4	4	......	......
Unknown	211	211	......	......	101	101	......	......	110	110	......	......
Total	3616	3373	243	6.7	1639	1517	122	7.4	1977	1856	121	6.1

CASES OF MEASLES REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	18	16	4	18	53	21	12	1	......	2	6	1	172
1	25	46	43	53	99	72	17	6	3	1	1	2	368
2	42	36	40	66	90	64	27	10	2	......	......	10	387
3	47	35	57	69	139	87	28	11	2	3	3	7	488
4	50	36	68	103	162	81	28	10	......	2	2	8	550
Under 5	182	169	232	309	543	325	112	38	7	8	12	28	1965
5– 9	326	275	476	770	908	427	66	16	1	10	15	48	3338
10–14	103	86	123	118	175	66	14	8	......	4	......	13	710
15–19	60	53	45	84	92	42	9	5	......	......	2	12	404
20–24	22	31	39	38	45	22	6	......	1	......	2	3	209
25–34	19	14	21	15	26	24	5	1	......	1	2	5	133
35–44	3	8	7	6	7	7	7	1	......	......	......	......	46
45–54	1	......	1	1	2	1	1	......	......	......	......	1	8
55–64	......	......	......	......	2	......	......	......	......	......	......	......	2
65 and over	......	......	......	......	......	......	......	......	......	......	......	......	......
Unknown	30	186	189	82	213	130	13	5	......	......	2	8	858
Total	746	822	1133	1423	2013	1044	233	74	9	23	35	118	7673

99 cases reported by death certificate only included.

CASES OF MEASLES REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	172	138	34	19.8	99	76	23	23.2	73	62	11	15.1
1	368	328	40	10.9	208	181	27	13.0	160	147	13	8.1
2	387	368	19	4.9	184	173	11	6.0	203	195	8	3.9
3	488	473	15	3.1	237	230	7	3.0	251	243	8	3.2
4	550	541	9	1.6	302	298	4	1.3	248	243	5	2.0
Under 5	1965	1848	117	5.9	1030	958	72	7.0	935	890	45	4.8
5– 9	3338	3321	17	.5	1566	1559	7	.4	1772	1762	10	.6
10–14	710	704	6	.8	339	336	3	.9	371	363	3	.8
15–19	404	397	7	1.7	209	204	5	2.4	195	193	2	1.0
20–24	209	202	7	3.3	110	106	4	3.6	99	96	3	3.0
25–34	133	131	2	1.5	55	55	......	......	78	76	2	2.6
35–44	46	43	3	6.5	19	19	......	......	27	24	3	11.1
45–54	8	8	......	......	3	3	......	......	5	5	......	......
55–64	2	2	......	......	1	1	......	......	1	1	......	......
65 and over	......	......	......	......	......	......	......	......	......	......	......	......
Unknown	858*	858	......	......	321	321	......	......	221	221	......	......
Total	7673	7514	159	2.1	3653	3562	91	2.5	3704	3636	68	1.8

*316 no sex given.

CASES OF SCARLET FEVER REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	4	3	2	2	1	......	1	......	1	1	1	5	21
1	5	4	7	6	2	2	3	3	2	4	5	14	57
2	19	13	13	13	11	7	6	6	9	8	19	18	142
3	12	16	19	15	11	10	6	7	9	13	15	34	167
4	12	17	14	25	22	8	7	12	12	14	19	38	200
Under 5	52	53	55	61	47	27	23	28	33	40	59	109	587
5- 9	119	87	86	115	81	59	55	53	65	129	161	208	1218
10-14	66	57	67	80	57	38	31	16	34	58	79	119	702
15-19	28	34	57	46	44	19	12	2	8	14	23	38	325
20-24	21	13	27	22	26	14	5	7	5	9	13	20	182
25-34	10	13	20	11	12	6	8	1	3	10	16	23	133
35-44	4	2	3	3	8	2	1	......	1	2	3	11	40
45-54	1	1	3	......	......	......	......	......	......	2	......	2	9
55-64	......	......	......	......	......	1	......	......	......	......	......	......	1
65 and over	......	......	......	1	2	......	......	1	......	......	......	......	4
Unknown	25	16	20	13	12	11	5	2	......	4	8	12	128
Total	326	276	338	352	289	177	140	110	149	268	362	542	3329

38 cases reported by death certificate only included.

CASES OF SCARLET FEVER REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	21	17	4	19.0	11	9	2	18.2	10	8	2	20.0
1	57	47	10	17.5	36	31	5	13.9	21	16	5	23.8
2	142	126	16	11.3	75	64	11	14.7	67	62	5	7.5
3	167	157	10	6.0	91	88	3	3.3	76	69	7	9.2
4	200	189	11	5.5	100	94	6	6.0	100	95	5	5.0
Under 5	587	536	51	8.7	313	286	27	8.6	274	250	24	8.8
5- 9	1218	1185	33	2.7	625	605	20	3.2	593	580	13	2.2
10-14	702	692	10	1.4	302	297	5	1.7	400	395	5	1.2
15-19	325	320	5	1.5	145	143	2	1.4	180	177	3	1.7
20-24	182	177	5	2.7	66	65	1	1.5	116	112	4	3.4
25-34	133	124	9	6.8	49	43	6	12.2	84	81	3	3.6
35-44	40	38	2	5.0	17	15	2	11.8	23	23	......	......
45-54	9	8	1	11.1	2	1	1	50.0	7	7	......	......
55-64	1	1	......	......	......	......	......	......	1	1	......	......
65 and over	4	4	......	......	2	2	......	......	2	2	......	......
Unknown	128	127	1	.8	64	64	......	......	64	63	1	1.6
Total	3329	3212	117	3.5	1585	1521	64	4.0	1744	1691	53	3.0

CASES OF TUBERCULOSIS REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.	Total
Under 1	3	1	1	7	5	8	3	2	4	1	3	2	40
1	......	3	1	1	6	2	2	4	......	2	1	2	24
2	4	2	......	......	1	......	2	1	1	......	......	2	13
3	1	3	1	1	2	3	2	1	2	......	2	......	18
4	2	1	3	1	2	2	3	1	1	2	......	......	18
Under 5	10	10	6	10	16	15	12	9	8	5	6	6	113
5– 9	13	8	5	13	10	9	6	13	2	9	3	10	101
10–14	7	8	15	13	20	13	20	10	4	9	12	14	145
15–19	24	24	31	41	27	26	30	36	22	27	24	24	336
20–24	60	54	63	58	86	75	73	60	57	62	54	65	767
25–34	129	105	113	106	147	160	123	107	114	114	111	100	1429
35–44	56	72	76	75	66	63	68	66	54	48	38	47	729
45–54	25	27	33	34	33	41	39	31	29	18	26	25	361
55–64	21	13	24	26	21	30	19	24	20	25	22	13	258
65 and over	10	12	10	21	22	8	11	11	11	13	14	16	159
Unknown	23	28	58	51	39	40	37	37	34	30	24	42	443
Total	378	361	434	448	487	480	438	404	355	360	334	362	4841

887 cases reported by death certificate only included.

CASES OF TUBERCULOSIS REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	40	......	40	100 0	21	......	21	100.0	19	......	19	100.0
1	24	......	24	100.0	13	......	13	100.0	11	......	11	100.0
2	13	......	13	100.0	3	......	3	100 0	10	......	10	100.0
3	18	......	18	100.0	10	......	10	100 0	8	......	8	100.0
4	18	5	13	72.2	9	3	6	66.6	9	2	7	77.7
Under 5	113	5	108	95.6	56	3	53	94.6	57	2	55	96.5
5– 9	101	57	44	43.6	52	27	25	48.1	49	30	19	38.8
10–14	145	84	61	42.1	47	31	16	34.0	98	53	45	45.9
15–19	336	204	132	39.3	141	97	44	31.2	195	107	88	45.1
20–24	767	441	326	42 5	391	251	140	35 8	376	190	186	49.5
25–34	1429	838	591	41.4	843	506	337	40.0	586	332	254	43.3
35–44	729	349	380	52.1	406	190	216	53.2	323	159	164	50.8
45–54	361	162	199	55.1	223	95	128	57.4	138	67	71	51.4
55–64	258	89	169	65.5	157	46	111	70 7	101	43	58	57.4
65 and over	159	31	128	80.5	90	13	77	85 5	69	18	51	74 0
Unknown	443*	437	6	1.3	240	237	3	1 2	166	163	3	1.8
Total	4841*	2697	2144†	44.3	2646	1496	1150	43.5	2158	1164	994	46.1

*37 no sex given.
†13 deaths reported later. Total deaths 2157.

CASES OF TYPHOID FEVER REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	......	......	......	......	1	......	......	......	......	......	......	......	1
1	......	1	......	......	1	......	1	......	......	......	......	......	3
2	......	......	......	......	......	......	......	......	......	......	......	1	1
3	......	......	1	......	1	1	2	1	2	......	1	1	10
4	......	......	......	......	......	......	1	1	2	2	2	......	8
Under 5	......	1	1	......	3	1	4	2	4	2	3	2	23
5- 9	4	3	1	1	4	1	6	6	6	11	4	9	56
10-14	2	4	6	1	2	9	9	8	12	16	13	7	89
15-19	8	2	6	3	3	5	7	14	8	15	7	5	83
20-24	4	3	8	6	5	2	17	10	13	16	8	5	97
25-34	3	4	11	9	12	7	21	23	15	22	15	16	158
35-44	2	2	6	1	6	9	15	11	10	14	5	8	89
45-54	2	2	2	1	2	......	5	11	6	8	4	......	43
55-64	2	1	1	......	1	......	2	1	3	1	1	2	15
65 and over	......	......	......	......	......	......	1	......	......	......	......	1	2
Unknown	1	......	3	2	2	2	6	5	1	5	1	1	29
Total	28	22	45	24	40	36	93	91	78	110	61	56	684

15 cases reported by death certificate only included.

CASES OF TYPHOID FEVER REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	1	......	1	100.0	1	......	1	100.0	......	......	......	......
1	3	2	1	33.3	......	......	......	......	3	2	1	33.3
2	1	1	......	......	1	1	......	......	......	......	......	......
3	10	10	......	......	6	6	......	......	4	4	......	......
4	8	7	1	12.5	4	3	1	25.0	4	4	......	......
Under 5	23	20	3	13.0	12	10	2	16.6	11	10	1	9.1
5- 9	56	55	1	1.8	30	29	1	3.3	26	26	......	......
10-14	89	82	7	7.9	55	52	3	5.4	34	30	4	11.8
15-19	83	76	7	8.4	46	45	1	2.2	37	31	6	16.2
20-24	97	92	6	6.2	50	47	4	8.0	47	45	2	4.3
25-34	158	141	18	11.4	89	82	8	9.0	69	59	10	14.5
35-44	89	73	14	15.7	60	47	12	20.0	29	26	2	6.9
45-54	43	32	11	25.6	28	18	10	35.7	15	14	1	6.7
55-64	15	11	4	26.6	9	8	1	11.1	6	3	3	50.0
65 and over	2	2	......	......	1	1	......	......	1	1	......	......
Unknown	29	29	......	......	12	12	......	......	17	17	......	......
Total	684	613	71	10.4	392	351	42	10.7	292	262	29	9.9

CASES OF WHOOPING COUGH REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	8	21	28	24	25	31	26	22	28	18	9	22	262
1	14	12	23	20	20	17	23	20	10	19	7	10	195
2	10	16	23	27	16	19	16	27	20	12	6	14	206
3	18	17	33	19	16	23	22	18	12	14	11	13	216
4	9	13	35	22	20	33	30	17	18	11	9	17	234
Under 5	59	79	142	112	97	123	117	104	88	74	42	76	1113
5- 9	80	55	143	85	73	71	59	29	38	32	34	38	737
10-14	10	6	11	11	9	1	4	6	6	1	2	3	70
15-19	1	1	......	1	1	......	......	1	1	......	1	......	7
20-24	......	......	......	1	......	......	......	......	......	......	1	1	3
25-34	......	......	1	1	......	1	......	......	......	......	1	1	5
35-44	......	1	......	1	......	......	......	......	......	......	......	......	2
45-54	......	......	......	......	......	......	......	......	......	......	......	......	......
55-64	......	......	......	1	......	......	......	......	......	......	......	......	1
65 and over	......	......	......	2	......	......	......	......	......	......	......	......	2
Unknown	4	13	16	27	44	15	14	......	......	4	......	4	141
Total	154	155	313	242	224	211	194	140	133	111	81	123	2081

193 cases reported only by death certificate included.

CASES OF WHOOPING COUGH REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1920 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	262	88	174	66.4	135	37	98	72.6	127	51	76	59.8
1	195	124	71	36.4	104	65	39	37.5	91	59	32	35.2
2	206	188	18	8.7	98	91	7	7.1	108	97	11	10.2
3	216	202	14	6.5	105	99	6	5.7	111	103	8	7.2
4	234	230	4	1.7	107	105	2	1 9	127	125	2	1 6
Under 5	1113	832	281	25.2	549	397	152	27.7	564	435	129	22.9
5- 9	737	724	13	1.8	339	336	3	.9	398	388	10	2.5
10-14	70	69	1	1.4	35	35	......	......	35	34	1	2.9
15-19	7	7	......	......	3	3	......	......	4	4	......	......
20-24	3	3	......	......	2	2	......	......	1	1	......	......
25-34	5	5	......	......	1	1	......	......	4	4	......	......
35-44	2	1	1	50.0	......	......	......	......	2	1	1	50.0
45-54	......	......	......	......	......	......	......	......	......	......	......	......
55-64	1	......	1	100.0	1	......	1	100.0	......	......	......	......
65 and over	2	2	......	......	2	2	......	......	......	......	......	......
Unknown	141	141	......	......	79	79	......	......	62	62	......	......
Total	2081	1784	297	14.3	1011	855	156	15.4	1070	929	141	13.2

CASES OF SMALLPOX REPORTED IN THE STATE OF MINNESOTA DURING THE YEAR 1920 BY COUNTIES, AGE GROUPS, AND VACCINATION CLASSIFICATION.

COUNTY	CLASS A				CLASS B		CLASSES C AND D				Age not given	Total
	Under 1 year	1–4	5–19	20 and over	7–19	20 and over	Under 1 year	1–4	5–19	20 and over		
Aitkin									6	4		10
Anoka							1		6	7		14
Becker						1		2	22	19	2	46
Beltrami					1				7	7	1	16
Benton						1		6	18	16	4	45
Bigstone								1	9	8	1	19
Blue Earth								3	33	28	10	74
Brown									2	1		3
Carlton								2	14	4	1	21
Carver								1	10	14	1	26
Cass									5	4		9
Chippewa						4	1	2	38	34	3	82
Chisago						1			2	5		8
Clay			2			1	2	4	34	32	7	82
Clearwater									1	2		3
Cook												
Cottonwood							1	3	12	10	6	32
Crow Wing							1	7	25	24	3	60
Dakota						5	4	6	36	32	4	87
Dodge						1			4	3		8
Douglas						3	1	9	45	52	4	114
Faribault			1					3	7	20	1	32
Fillmore						3		3	8	12	1	27
Freeborn						5	7	4	26	36	13	91
Goodhue						1			8	12	4	25
Grant							1	2	5	20	3	61
Hennepin (outside Mpls.)	1					2		7	3	25	9	67
MINNEAPOLIS	2	4	37	33	14	59	27	142	1115	744		2177
Houston									3	4	2	9
Hubbard							1		11	6	1	19
Isanti									2	6	3	11
Itasca						1			1	8		10
Jackson						1			7	14		22
Kanabec								2	11	4	6	23
Kandiyohi						1		4	20	14		39
Kittson					1				3			4
Koochiching						3			1	2		6
Lac Qui Parle			1		1	6	1	2	19	20	4	54
Lake					1	6		5	63	23	1	99
Le Sueur							2	3	23	13	2	43
Lincoln									8	5		13
Lyon										3		3
McLeod							2		6	12		20
Mahnomen								1				1
Marshall							1	1	14	10	1	27
Martin									7	14		21
Meeker					1		2	6	20	27	7	63
Mille Lacs						1			11	11	2	25
Morrison				1				1	1	3		6
Mower						3	1	9	49	52	7	121
Murray									2	1		3
Nicollet								1	4	7		12
Nobles								1	2	8		11
Norman			1			4		3	39	22	3	72
Olmsted				1		1		2	32	55	3	94
Ottertail						3	1	5	64	44	9	126
Pennington						1						1
Pine								4	27	11	3	45
Pipestone									1	2	1	4
Polk		1	1		1	2		6	58	39	4	112
Pope								1	17	7		25
Ramsey (outside St. Paul)			1			1		11	88	28	6	135
ST. PAUL							8	53	291	272		624
Red Lake								1	5	4		10
Redwood						1			1	1	2	5
Renville									16	18	14	48
Rice			3		1	9	3	2	35	49	9	111
Rock									1	2		3
Roseau						1		3	7	11	2	24
St. Louis (outside Duluth)						3	1	3	34	8	2	51
DULUTH		1	3	7		18	1	12	88	94		224
Scott			1			1			22	16	2	42

CASES OF **SMALLPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE YEAR 1920 BY COUNTIES, AGE GROUPS, AND VACCINATION CLASSIFICATION.—Continued.

COUNTY	CLASS A				CLASS B		CLASSES C AND D				Age not given	Total
	Under 1 year	1–4	5–19	20 and over	7–19	20 and over	Under 1 year	1–4	5–19	20 and over		
Sherburne	......	......	......	......	......	......	......	......	20	7	1	28
Sibley	......	......	......	......	......	......	......	......	1	3	1	5
Stearns	......	......	......	......	......	1	3	16	84	58	10	172
Steele	......	......	2	1	......	3	......	3	24	23	2	58
Stevens	......	......	......	......	......	......	......	......	......	......	......	......
Swift	......	......	......	......	......	......	2	1	10	10	2	25
Todd	......	......	......	......	......	1	1	6	20	26	......	54
Traverse	......	......	......	......	......	......	......	......	2	2	......	4
Wabasha	......	......	......	......	......	1	......	......	4	4	1	10
Wadena	......	......	......	......	......	......	......	......	......	2	......	2
Waseca	......	......	......	......	......	......	......	......	......	1	......	1
Washington	......	......	1	......	1	1	1	2	25	22	3	56
Watonwan	......	......	......	......	......	3	......	......	15	7	3	28
Wilkin	......	......	......	......	......	......	......	......	......	......	......	......
Winona	......	......	......	......	......	3	......	11	104	55	14	187
Wright	......	......	......	1	......	1	......	2	13	10	3	30
Yellow Medicine	......	......	......	......	......	......	......	......	7	6	......	13
Total	3	6	54	44	22	168	77	390	2994	2361	214	6333

CASES AND DEATHS COMMUNICABLE DISEASES REPORTED IN THE STATE DURING THE CALENDAR YEAR 1921.

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Actinomycosis	Cases			1			1	1			2			5
	Deaths			1			1	1			2			5
Anthrax	Cases	1												1
	Deaths													
Chickenpox	Cases	507	379	418	376	496	303	54	6	15	113	243	341	3,251
	Deaths					2					1		1	4
Diphtheria	Cases	338	256	244	264	260	183	171	215	459	818	635	537	4,380
	Deaths	18	14	14	21	16	16	9	17	16	22	34	23	220
Encephalitis	Cases	8	17	23	13	10	7	5	2	5	1	3	2	96
	Deaths	8	16	12	12	4	6	4	2	5	1	2		72
Influenza	Cases	24	24	40	26	6	4	2	6	9	11	18	7	177
	Deaths	7	17	28	29	13	4	2	5	9	9	16	3	142
Malaria	Cases				1		1							2
	Deaths													
Measles	Cases	146	175	252	205	279	232	58	10	21	25	38	61	1,502
	Deaths	2	4	7	4	3	5	1				2	4	32
Epidemic Meningitis	Cases	4	5	11	4	4	5	12	9	5	6	3	2	70
	Deaths		3	4	2	1	6	5	5	2	2	1	1	32
Ophthalmia Neonatorum	Cases				1			3		1	3			8
	Deaths													
Pellagra	Cases												1	1
	Deaths												1	1
Pneumonia	Cases	223	235	259	199	123	62	51	40	69	95	111	170	1,737
	Deaths	213	225	243	191	117	60	49	39	68	94	107	162	1,568
Poliomyelitis	Cases	2		1	6	3	59	147	244	142	76	16	6	702
	Deaths	1	1	1	2		3	16	35	22	15	5	1	102
Rabies	Cases									1				1
	Deaths									1				1
Scarlet Fever	Cases	670	770	759	598	605	258	165	225	315	598	751	874	6,588
	Deaths	16	24	24	28	21	10	8	8	6	16	13	17	191
Smallpox	Cases	2,380	1,874	1,456	1,232	911	531	156	81	53	79	185	437	9,375
	Deaths	4	6	3	3	2	3	1				1	2	25
Tetanus	Cases	2			1	2	3	8	4	2	2	1	4	29
	Deaths	1			1	1	3	7	4	2	2	1	5	27
Trachoma	Cases	3		4	4	1	3		2	4	1	2	6	30
	Deaths													
Tuberculosis	Cases	323	395	434	436	425	381	393	789	289	500	382	453	5,200
	Deaths	168	183	195	186	175	156	168	128	117	129	126	149	1,880
Typhoid Fever	Cases	33	40	116	71	64	47	82	51	70	81	57	64	776
	Deaths	5	4	4	11	6	4	7	7	11	13	10	8	90
Whooping Cough	Cases	83	124	102	91	87	89	107	66	49	61	16	23	898
	Deaths	20	21	29	18	18	6	13	8	6	7	3	5	154

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	State	Minneapolis	St. Paul	Duluth	Total
Actinomycosis	4	....	1	....	5
Anthrax	1	....	....	....	1
Chickenpox	763	1,274	915	299	3,251
Diphtheria	1,875	1,452	853	200	4,380
Encephalitis	79	17	....	....	96
Erysipelas	70	22	100	28	220
Influenza	140	30	7	....	177
Leprosy	2	2	....	....	4
Malaria	2	....	....	....	2
Measles	919	397	106	80	1,502
Meningitis	54	1	1	14	70
Ophthalmia Neonatorum	4	1	....	3	8
Pellagra	1	....	....	....	1
Pneumonia	1,643	26	13	55	1,737
Poliomyelitis	612	45	40	5	702
Rabies	1	....	....	....	1
Scarlet Fever	2,782	2,374	1,164	268	6,588
Smallpox	4,855	2,675	1,553	292	9,375
Tetanus	19	3	6	1	29
Trachoma	20	6	3	1	30
Tuberculosis	3,103	1,439	527	131	5,200
Typhoid Fever	493	149	122	12	776
Whooping Cough	295	70	270	263	898

CASES OF **CHICKENPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	11	2	10	9	14	8	4	1	1	3	6	8	77
1	11	11	13	5	19	14	5	......	1	1	7	13	100
2	13	10	21	15	27	14	......	......	......	5	7	19	131
3	24	13	17	20	17	14	9	1	2	1	13	19	150
4	39	24	17	20	30	28	5	1	1	9	11	26	211
Under 5	98	60	78	69	107	78	23	3	5	19	44	85	669
5- 9	214	206	222	205	283	156	21	2	8	74	154	178	1723
10–14	91	49	59	51	71	38	4	......	2	11	25	41	442
15–19	27	19	12	16	16	6	......	......	......	3	2	14	115
20–24	17	7	4	7	5	4	2	......	......	......	4	4	54
25–34	12	6	3	7	5	9	1	......	......	......	1	9	53
35–44	8	6	4	8	2	7	2	1	......	......	1	1	40
45–54	2	4	3	2	......	1	......	......	......	1	1	2	16
55–64	......	1	......	......	......	......	......	......	......	......	......	......	1
65 and over	2	1	......	......	......	......	......	......	......	......	......	......	3
Unknown	36	20	33	11	7	4	1	......	......	5	11	7	135
Total	507	379	418	376	496	303	54	6	15	113	243	341	3251

CASES OF **DIPHTHERIA** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	2	1	5	4	3	6	1	2	3	2	11	3	43
1	6	4	3	5	6	2	2	2	2	11	8	1	52
2	9	6	5	6	5	5	5	3	9	25	16	19	113
3	14	3	18	16	11	8	10	8	19	23	35	24	189
4	18	15	12	16	11	9	6	11	13	35	18	29	193
Under 5	49	29	43	47	36	30	24	26	46	96	88	76	590
5- 9	107	55	55	62	61	52	50	76	176	323	240	146	1403
10-14	55	56	42	46	38	31	32	40	115	181	126	115	877
15-19	27	21	25	20	23	10	14	13	26	56	53	42	330
20-24	25	26	18	23	21	9	10	19	15	32	28	34	260
25-34	31	29	29	35	27	20	13	20	29	49	34	38	354
35-44	16	6	14	8	18	9	10	8	18	30	20	32	189
45-54	6	6	4	5	13	4	4	5	4	17	4	12	84
55-64	1	1	4	4	4	3	1	......	2	4	3	1	28
65 and over	4	2	......	......	2	.....	1	2	2	3	2	2	20
Unknown	17	25	10	14	17	15	12	6	26	27	37	39	245
Total	338	256	244	264	260	183	171	215	459	818	635	537	4380

36 cases reported by death certificate only included.

CASES OF **DIPHTHERIA** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	43	36	7	16.3	31	27	4	12.9	12	9	3	25.0
1	52	43	9	17.3	33	30	3	9.1	19	13	6	31.6
2	113	91	22	18.6	62	51	11	17.4	51	40	11	21.6
3	189	172	17	9.0	101	87	14	13.9	88	85	3	3.4
4	193	169	24	12.4	108	96	12	11.1	85	73	12	14.1
Under 5	590	511	79	13.4	335	291	44	13.1	255	220	35	13.7
5- 9	1403	1325	78	5.6	717	680	37	5.2	686	645	41	6.0
10-14	877	852	25	2.9	414	403	11	2.7	463	449	14	3.0
15-19	330	319	11	3.3	129	124	5	3.7	201	195	6	3.0
20-24	260	253	7	2.7	87	83	4	4.6	173	170	3	1.7
25-34	354	349	5	1.4	121	118	3	2.5	233	231	2	.9
35-44	189	182	7	3.7	63	60	3	4.8	126	122	4	3.2
45-54	84	77	7	8.3	28	24	4	14.3	56	53	3	5.4
55-64	28	27	1	3.6	12	11	1	8.3	16	16	......	......
65 and over	20	20	......	.....	5	5	......	.....	15	15	......	......
Unknown	245*	245	......	.....	106	106	......	.....	131	131	......	......
Total	4380	4160	220	5.0	2017	1905	112	5.5	2355	2247	108	4.6

*8 cases sex not given.
36 cases reported by death certificate only included.

CASES OF MEASLES REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	9	5	12	7	11	9	2	2	6	......	4	6	73
1	8	9	11	7	13	6	5	2	1	3	5	4	74
2	11	7	22	11	11	18	8	2	2	2	2	4	100
3	4	9	13	16	19	16	6	....	1	......	1	6	91
4	12	10	16	15	23	19	6	1	......	......	2	6	110
Under 5	44	40	74	56	77	68	27	7	10	5	14	26	448
5– 9	32	66	107	103	133	109	14	2	4	14	16	23	623
10–14	11	16	35	22	28	23	4	.....	3	2	4	5	153
15–19	7	11	14	5	15	5	3	.....	1	1	......	2	64
20–24	4	5	4	5	5	4	3	......	1	......	1	2	34
25–34	2	4	6	2	3	7	3	1	......	1	......	......	29
35–44	1	1	4	3	......	......	2	......	......	1	......	1	13
45–54	1	......	1	1	......	......	......	......	......	......	......	......	3
55–64	......	1	......	......	......	......	......	......	......	......	......	......	1
65 and over	......	......	......	......	......	......	......	......	......	......	......	......	......
Unknown	44	31	7	8	18	16	2	......	2	1	3	2	134
Total	146	175	252	205	279	232	58	10	21	25	38	61	1502

24 cases reported by death certificate only included.

CASES OF MEASLES REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	73	61	12	16.4	34	30	4	11 8	39	31	8	20.5
1	74	67	7	9.5	37	34	3	8 1	37	33	4	10 8
2	100	98	2	2.0	59	58	1	1.7	41	40	1	2 4
3	91	90	1	1 1	39	39	......	....	52	51	1	1.9
4	110	108	2	1 8	49	47	2	4.1	61	61	......	......
Under 5	448	424	24	5.4	218	208	10	4.6	230	216	14	6.1
5– 9	623	620	3	.5	347	344	3	.9	276	276	......	......
10–14	153	152	1	.7	75	74	1	1 3	78	78	......	......
15–19	64	62	2	3.1	21	20	1	4.8	43	42	1	2 3
20–24	34	33	1	2.9	11	10	1	9 1	23	23	......	......
25–34	29	28	1	3.4	15	15	......	.....	14	13	1	7.1
35–44	13	13	......	.....	4	4	......	...	9	9	......	......
45–54	3	3	......	....	1	1	......	...	2	2	......	......
55–64	1	1	......	.....	1	1	......	....	....	......	......	......
65 and over	...	......	......	....	.	......	......	....	..	......	......	......
Unknown	134*	134	......	..	31	31	....	....	32	32	.....	......
Total	1502	1470	32	2 1	724	708	16	2.2	707	691	16	2 3

*71 sex not given.

CASES OF SCARLET FEVER REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	3	5	3	2	5	1	1	1	3	5	4	7	40
1	11	12	8	9	10	4	2	4	2	11	16	18	107
2	29	33	22	25	27	13	7	12	10	18	26	35	257
3	36	40	56	35	27	17	12	12	16	24	44	49	368
4	50	40	56	44	34	21	17	20	26	33	54	68	463
Under 5	129	130	145	115	103	56	39	49	57	91	144	177	1235
5– 9	259	271	265	230	250	108	74	89	143	276	311	309	2585
10–14	128	156	131	112	125	50	23	47	66	126	148	150	1262
15–19	63	78	89	52	42	13	11	12	15	43	55	96	569
20–24	33	48	56	39	29	9	3	10	6	18	25	58	334
25–34	40	45	36	22	20	11	6	9	8	23	31	37	288
35–44	4	14	9	6	6	4	1	1	1	4	10	12	72
45–54	3	3	3	2	3	1	......	......	......	......	1	5	21
55–64	......	......	......	1	......	......	......	......	......	......	......	......	1
65 and over	......	......	1	......	......	......	......	......	......	......	......	......	1
Unknown	11	25	24	19	27	6	8	8	19	17	26	30	220
Total	670	770	759	598	605	258	165	225	315	598	751	874	6588

45 cases reported by death certificate only included.

CASES OF SCARLET FEVER REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	40	29	11	27.5	24	18	6	25.0	16	11	5	31.2
1	107	94	13	12.1	50	45	5	10.0	57	49	8	12.3
2	257	232	25	9.7	141	125	16	11.3	116	107	9	7.8
3	368	355	13	3.5	186	178	8	4.3	182	177	5	2.7
4	463	447	16	3.6	232	224	8	3.4	231	223	8	3.5
Under 5	1235	1157	78	6.3	633	590	43	6.8	602	567	35	5.8
5– 9	2585	2530	55	2.1	1256	1226	30	2.4	1329	1304	25	1.9
10–14	1262	1242	20	1.6	604	590	14	2.3	658	652	6	.9
15–19	569	555	14	2.5	243	236	7	3.0	326	319	7	2.1
20–24	334	326	8	2.4	123	121	2	1.6	211	205	6	2.8
25–34	288	276	12	4.2	96	92	4	4.2	192	184	8	4.1
35–44	72	69	3	4.2	28	26	2	7.1	44	43	1	2.3
45–54	21	20	1	4.8	8	8	......	......	13	12	1	7.7
55–64	1	1	......	......	......	......	......	......	1	1	......	......
65 and over	1	1	......	......	......	......	......	......	1	1	......	......
Unknown	220*	220	......	......	98	98	......	......	78	78	......	......
Total	6,588	6,397	191	2.9	3,089	2,987	102	3.3	3,455	3,366	89	2.6

*44 sex not given.

CASES OF **TUBERCULOSIS** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	2	5	4	3	1	2	5	4	1	......	2	1	30
1	4	1	7	1	1	1	6	2	......	2	2	5	32
2	......	1	1	3	1	4	......	1	3	1	......	1	16
3	2	......	5	......	1	......	1	3	1	4	2	......	19
4	......	......	1	1	......	2	......	2	......	2	......	1	9
Under 5	8	7	18	8	4	9	12	12	5	9	6	8	106
5- 9	7	6	9	9	17	10	12	17	4	9	8	11	119
10-14	11	13	14	8	12	17	8	19	8	13	20	11	154
15-19	21	23	42	40	41	45	25	61	14	35	38	33	418
20-24	36	67	51	67	64	43	73	160	58	94	60	75	848
25-34	91	127	122	144	113	113	120	260	105	167	113	188	1663
35-44	45	40	55	57	71	54	56	121	43	86	68	56	752
45-54	20	35	26	37	34	28	20	56	18	37	29	32	372
55-64	14	22	33	26	19	14	28	33	14	19	16	14	252
65 and over	11	14	21	18	26	20	6	14	9	15	11	11	176
Unknown	59	41	43	22	24	28	33	36	11	16	13	14	340
Total	323	395	434	436	425	381	393	789	289	500	382	453	5200

800 cases reported by death certificate only included.

CASES OF **TUBERCULOSIS** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	30	......	30	100.0	18	......	18	100.0	12	......	12	100.0
1	32	7	25	78.1	17	4	13	76.5	15	3	12	90.0
2	16	5	11	68.7	9	3	6	66.6	7	2	5	71.4
3	19	8	11	57.9	8	4	4	50.0	11	4	7	63.6
4	9	8	1	11.1	5	4	1	20.0	4	4	......	......
Under 5	106	28	78	73.6	57	15	42	73.7	49	13	36	73.5
5- 9	119	83	36	30.3	54	41	13	24.1	65	42	23	35.4
10-14	154	111	43	27.9	68	48	20	29.4	86	63	23	26.7
15-19	418	272	146	34.9	158	109	49	31.0	260	163	97	37.3
20-24	848	602	246	29.0	405	295	110	27.2	443	307	136	30.7
25-34	1,663	1,157	506	30.4	1,003	775	228	22.7	660	382	278	42.1
35-44	752	401	351	46.7	430	244	186	43.3	322	157	165	51.2
45-54	372	170	202	54.3	213	107	106	49.8	159	63	96	60.4
55-64	252	106	146	57.9	162	66	96	59.3	90	40	50	55.5
65 and over	176	64	112	63.6	103	37	66	64.1	73	27	46	63.0
Unknown	340*	338	2	.6	200	198	2	1.0	128	128	......	......
Total	5,200	3,332	1,868†	35.9	2,853	1,935	918	32.2	2,335	1,385	950	40.7

* unknown sex 12.

†12 deaths reported later. Total deaths 1880.

CASES OF **TYPHOID FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	......	......	......	......	......	......	1	......	1	1	......	......	3
1	......	......	......	1	......	......	......	......	......	......	......	......	1
2	1	......	1	1	1	......	......	......	3	1	1	......	9
3	2	1	2	1	......	1	1	......	1	2	......	1	12
4	......	1	......	1	......	2	......	2	1	......	3	1	11
Under 5	3	2	3	4	1	3	2	2	6	4	4	2	36
5- 9	4	3	8	9	6	7	7	8	9	15	7	10	93
10-14	......	13	5	7	1	4	14	6	12	14	10	12	98
15-19	5	3	18	14	4	4	20	9	11	11	5	5	109
20-24	9	3	31	12	9	6	12	5	3	8	4	8	110
25-34	4	5	9	9	18	12	14	8	14	6	8	13	120
35-44	3	4	7	8	2	5	5	7	11	11	10	5	78
45-54	2	4	4	2	1	4	7	4	3	4	4	3	42
55-64	2	1	1	1	2	1	......	1	......	2	......	1	12
65 and over	......	......	1	......	1	......	......	......	1	2	......	......	5
Unknown	1	2	29	5	19	1	1	1	......	4	5	5	73
Total	33	40	116	71	64	47	82	51	70	81	57	64	776

15 cases reported by death certificate only included.

CASES OF **TYPHOID FEVER** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS, SEX AND TERMINATION.

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	3	3	......	......	1	1	......	......	2	2	......	......
1	1	1	......	......	1	1	......	......	......	......	......	......
2	9	9	......	......	6	6	......	......	3	3	......	......
3	12	11	1	8.3	7	7	......	......	5	4	1	20.0
4	11	11	......	......	5	5	......	......	6	6	......	......
Total under 5	36	35	1	2.8	20	20	......	......	16	15	1	6.3
5- 9	93	89	4	4.3	48	45	3	6.3	45	44	1	2.2
10-14	98	94	4	4.1	53	52	1	1.9	45	42	3	6.7
15-19	109	96	13	11.9	63	56	7	11.1	46	40	6	13.0
20-24	110	95	15	13.5	64	57	7	10.9	46	38	8	17.4
25-34	120	98	22	18.3	71	57	14	19.7	49	41	8	16.3
35-44	78	68	10	12.8	47	39	8	17.0	31	29	2	6.5
45-54	42	26	16	38.1	27	18	9	33.3	15	8	7	46.7
55-64	12	9	3	25.0	6	5	1	16.7	6	4	2	33.3
65 and over	5	3	2	40.0	3	1	2	66.6	2	2	......	......
Unknown	73	73	......	......	57	57	......	......	16	16	......	......
Total	776	686	90	11.6	459	407	52	11.3	317	279	38	12.

CASES OF **WHOOPING COUGH** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS AND MONTHS.

AGE GROUPS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under 1	16	19	18	17	17	11	12	10	6	8	5	3	142
1	7	14	9	7	9	5	20	5	7	5	1	3	92
2	12	17	14	7	6	17	14	10	6	8	2	3	116
3	4	16	14	9	10	13	14	8	13	7	3	2	113
4	5	15	11	8	10	10	17	8	8	10	2	4	108
Under 5	44	81	66	48	52	56	77	41	40	38	13	15	571
5- 9	22	36	32	35	30	25	26	20	8	22	3	7	266
10-14	1	3	3	2	3	2	1	1	1	......	......	1	18
15-19	......	......	......	......	......	......	......	......	......	......	......	......	......
20-24	1	......	......	......	......	......	......	......	......	......	......	......	1
25-34	......	......	......	......	......	......	1	2	......	1	......	......	4
35-44	......	......	......	......	1	......	......	2	......	......	......	......	3
45-54	......	1	......	......	......	......	......	......	......	......	......	......	1
55-64	......	......	......	......	......	......	......	......	......	......	......	......	......
65 and over	......	......	1	......	......	......	......	......	......	......	......	......	1
Unknown	15	3	......	6	1	6	2	......	......	......	......	......	33
Total	83	124	102	91	87	89	107	66	49	61	16	23	898

122 cases reported by death certificate only included.

CASES OF **WHOOPING COUGH** REPORTED IN THE STATE OF MINNESOTA DURING THE CALENDAR YEAR 1921 BY AGE GROUPS, SEX AND TERMINATION

AGE GROUPS	BOTH SEXES				MALE				FEMALE			
	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate	Total	Non Fatal	Fatal	Fatality Rate
Under 1	142	50	93	65.6	63	25	38	60.3	79	25	55	69.6
1	92	62	30	32.6	46	35	11	23.9	46	27	19	41.3
2	116	104	12	10.3	52	45	7	13.5	64	59	5	7.8
3	113	107	6	5.3	53	48	5	9.4	60	59	1	1.7
4	108	105	3	2.8	53	51	2	3.8	55	54	1	1.8
Total under 5	571	428	143	25.0	267	204	63	23.6	304	224	80	26.3
5- 9	266	259	7	2.6	132	129	3	2.3	134	130	4	3.0
10-14	18	18	......	....	7	7	....	....	11	11	.....	.....
15-19	....	.....	......	....	....	.....	.....		....	.....	.....	......
20-24	1	1	......	....	....	.....	.....		1	1	....	.....
25-34	4	4	......	....	.	.....	.....		4	4	....	.....
35-44	3	2	1	33.3	1	1	....		2	1	1	50.0
45-54	1	1	......	....	1	1	.....			....		.....
55-64	..	......	......	....	....	.....	....			....	....	.....
65 and over	1	......	1	100.0	..	.....	....		1	....	1	100.0
Unknown	33	33	1	3.0	5	4	1	20.0	11	11	.	....
Total	898*	745	154	17.1	413	346	67	16.2	468	382	87	18.6

*17 sex not given.

CASES OF **SMALLPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE YEAR 1921 BY COUNTIES, AGE GROUPS, AND VACCINATION CLASSIFICATION.

COUNTY	CLASS A				CLASS B		CLASSES C AND D				Age not given	Total
	Under 1 year	1-4	5-19	20 and over	7-19	20 and over	Under 1 year	1-4	5-19	20 and over		
Aitkin	......	......	......	......	......	......	3	2	14	8	1	28
Anoka	......	......	......	......	......	......	1	5	31	11	3	51
Becker	......	......	......	......	......	1	......	5	53	29	17	105
Beltrami	......	......	3	......	......	1	3	8	62	52	4	133
Benton	......	......	......	......	......	1	2	3	18	15	4	43
Bigstone	......	......	1	......	......	1	3	2	4	21	3	35
Blue Earth	......	......	......	......	......	6	......	3	30	44	11	94
Brown	......	......	......	......	......	2	......	4	13	12	2	33
Carlton	......	......	......	......	......	4	......	2	16	12	2	36
Carver	......	......	......	......	......	......	......	1	15	15	1	32
Cass	......	......	2	......	......	2	......	1	26	14	*2	47
Chippewa	......	......	......	......	......	3	......	3	43	34	4	87
Chisago	......	......	......	......	......	......	2	1	4	3	......	10
Clay	1	......	......	1	......	8	1	9	85	51	10	166
Clearwater	......	......	......	......	1	......	1	3	3	1	......	9
Cook	......	......	......	......	......	......	......	......	......	......	......	......
Cottonwood	......	......	......	......	......	1	1	1	13	19	2	37
Crow Wing	......	......	......	......	......	1	1	2	11	8	3	26
Dakota	......	......	5	1	......	4	......	10	70	36	*6	132
Dodge	......	......	......	......	......	1	......	1	3	11	1	17
Douglas	......	......	......	1	......	3	1	7	26	21	2	61
Faribault	......	......	......	......	1	2	......	2	14	3	1	23
Fillmore	......	......	......	......	......	2	1	2	28	33	12	78
Freeborn	......	......	1	......	1	......	......	2	27	22	6	59
Goodhue	......	......	1	......	......	2	1	3	51	25	10	93
Grant	......	......	......	......	......	......	......	......	1	2	1	4
Hennepin (outside Mpls.)	......	......	2	......	......	2	......	6	54	38	9	111
MINNEAPOLIS	3	6	66	63	15	291	46	189	895	1101	......	2675
Houston	......	......	......	......	......	......	......	......	13	14	......	27
Hubbard	......	......	......	......	......	......	......	......	3	2	......	5
Isanti	......	......	......	......	......	......	......	......	4	2	1	7
Itasca	......	......	......	3	......	1	......	......	2	9	......	15
Jackson	......	......	......	2	......	......	1	5	22	31	*4	65
Kanabec	......	......	1	......	......	......	......	......	18	11	2	32
Kandiyohi	......	......	......	1	......	2	3	2	69	30	4	111
Kittson	......	......	......	......	......	1	......	......	......	4	......	5
Koochiching	......	......	......	......	......	1	......	......	3	11	3	18
Lac Qui Parle	......	......	......	......	......	......	......	4	1	13	1	19
Lake	......	......	1	......	......	......	......	1	11	4	......	17
Le Sueur	......	......	......	......	......	2	1	3	22	12	**2	42
Lincoln	......	......	......	......	......	1	......	3	20	11	4	39
Lyon	......	......	1	......	......	3	1	5	43	23	3	79
McLeod	......	......	......	......	......	......	......	2	18	20	......	40
Mahnomen	......	......	6	......	1	2	4	7	22	15	1	58
Marshall	......	......	......	......	......	3	......	......	25	13	3	44
Martin	......	......	......	......	......	2	1	1	19	24	6	53
Meeker	......	......	......	......	......	3	......	3	12	34	4	56
Mille Lacs	......	......	......	......	......	1	......	......	2	5	1	9
Morrison	......	1	......	......	......	......	1	5	8	23	3	41
Mower	......	......	......	......	......	5	1	11	99	84	9	209
Murray	......	......	......	......	......	1	1	3	5	1	......	11
Nicollet	......	......	......	......	......	3	......	......	7	3	2	15
Nobles	......	......	......	......	......	......	......	1	......	2	......	3
Norman	......	......	......	......	......	2	......	4	19	16	1	42
Olmsted	......	......	......	......	......	4	3	12	45	68	1	133
Ottertail	......	......	......	......	......	4	1	7	53	51	38	154
Pennington	......	......	......	......	......	3	1	6	61	36	5	112
Pine	......	......	......	1	......	4	......	......	13	8	1	27
Pipestone	......	......	1	......	......	2	2	6	39	28	***9	87
Polk	......	......	5	1	......	4	6	20	167	93	10	306
Pope	......	......	......	......	......	3	......	1	5	13	1	23
Ramsey (outside St. Paul)	......	......	......	......	......	3	3	6	38	32	2	84
ST. PAUL	......	......	......	......	......	......	11	83	838	621	......	1553
Red Lake	......	......	......	......	......	......	......	1	......	4	1	6
Redwood	......	......	1	......	......	3	1	5	43	15	7	75
Renville	......	......	......	2	......	1	......	4	24	22	3	56
Rice	......	......	......	2	......	6	1	5	39	48	4	105
Rock	......	......	......	......	......	......	1	3	8	5	......	17
Roseau	......	......	......	......	......	1	1	......	1	5	2	10
St. Louis (outside Duluth)	......	......	2	......	......	2	......	5	10	20	11	50
DULUTH	......	2	5	7	1	20	8	25	105	119	......	292
Scott	......	......	......	......	......	......	......	2	14	22	2	40

CASES OF **SMALLPOX** REPORTED IN THE STATE OF MINNESOTA DURING THE YEAR 1921 BY COUNTIES, AGE GROUPS, AND VACCINATION CLASSIFICATION.—Continued.

COUNTY	CLASS A				CLASS B		CLASSES C AND D				Age not given	Total
	Under 1 year	1–4	5–19	20 and over	7–19	20 and over	Under 1 year	1–4	5–19	20 and over		
Sherburne	......	......	......	......	......	......	......	1	5	7	1	14
Sibley	......	......	......	......	......	2	......	1	9	11	4	27
Stearns	......	......	......	1	......	2	5	25	97	87	10	227
Steele	......	......	1	......	......	2	......	1	13	14	2	33
Stevens	......	......	......	......	......	......	......	......	7	4	1	12
Swift	......	......	......	......	1	2	1	6	40	17	*39	106
Todd	......	......	......	1	......	1	......	2	18	22	25	69
Traverse	......	......	......	......	......	......	......	1	21	14	18	54
Wabasha	......	......	1	......	......	6	......	......	10	15	*2	34
Wadena	......	......	......	......	......	......	......	......	4	3	......	7
Waseca	......	......	......	1	......	......	......	1	6	6	......	14
Washington	......	2	1	1	......	1	2	11	62	45	10	135
Watonwan	......	......	......	1	......	......	1	3	21	16	......	42
Wilkin	......	......	......	......	......	......	......	......	1	3	......	4
Winona	......	1	1	1	......	1	3	6	38	37	9	97
Wright	......	......	5	1	......	1	2	2	21	39	6	77
Yellow Medicine	......	......	......	......	......	......	......	......	3	3	......	6
Total	4	12	113	92	21	449	134	588	3956	3611	395	9375

*Class B 1 case.

**Class A 1 case.

***Class A 1 case; Class B 1 case.

Unknown age	A	B	C&D.
	2	5	388

TRACHOMA SITUATION

A review of the trachoma situation in Minnesota was given in the last biennial report. It was there pointed out that the Indians in Minnesota, among whom trachoma is prevalent to a menacing degree, are fast becoming citizenized; that schools for Indian children previously sustained at federal expense had been closed, necessitating more mingling of white and Indian children; and that already the proportion of trachoma cases, one to 300, in children in regions contiguous to the Leach Lake Indian Reservation, is considerably higher than in communities not in contact with Indians or certain other well known trachoma infected groups, one to 750.

The White Earth Reservation Hospital, opened in 1912, was closed July 1, 1920, by the federal authorities because of lack of funds, and the position of agency physician was abolished.

While much valuable work has been done by the Federal Indian Bureau in the treatment of the trachomatous Indians of this state, of necessity, partly because of lack of funds and partly because of the irregularities in the living habits of many of the Indians themselves, this work has been but intermittently carried out.

Early in 1920 the State Board of Health requested the assistance of the Federal Indian Bureau and the United States Public Health Service in establishing on a more permanent basis work for the radical and other treatment of trachoma, having for its aim the eradication of this disease from Minnesota. It was hoped that the Indian Bureau might establish one or more permanent trachoma clinics, furnishing free hospital care for all Indians, and that mobile clinics might also be carried on with federal experts to look after operative and other treatment of the cases.

Since no funds had been granted to the State Board of Health for this work it could offer to do only a minor part, such as assisting in finding the cases and in pointing out to the local boards of health their duty to give financial aid in bearing hospital expenses for their unfortunate citizens as provided for under the infectious disease act. Owing to the necessity for closing the hospital at the White Earth Reservation, no work could be done there, and because of insufficient funds at the disposal of both federal departments, it was deemed best to undertake merely a demonstration of what could be done if funds were later provided.

The Federal Indian Bureau made provision for this work in the hospital on the Red Lake Indian Reservation and the United States Public Health Service donated the services of a trachoma expert, Dr. J. L. Goodwin, and a nurse. Dr. Goodwin and the nurse began work at the Red Lake Reservation on September 20 and continued this work until December 24, 1920. In the search for cases assistance was given by the Epidemiologists from this Division.

Summary of Dr. Goodwin's Report

Number of schools examined	...	5
Number of school children examined	512	.....
Number examined outside of schools	660	.....
Total examined	...	1,172
Number of trachoma cases (including 3 old healed cases and 2 non-residents)	...	88

Number operated under general anaesthetic	21	.....
Number operated under local anaesthetic	25	.....
Total number operated	...	46
Cured by operation	...	34

The percentage, 7.5 of trachoma cases among those examined in the Red Lake Region was notably less than the percentage of trachoma cases, 15.4, found in the Minnesota Indians as a whole in the survey of 1913. This variation is accounted for in part because the older Indians, among whom trachoma is more prevalent, did not present themselves for examination, and in part, because of treatment previously given by the Federal Indian Service.

In this demonstration the surgeon was not permitted to treat eye conditions which were not trachmatous. It is believed that in undertaking the eradication of trachoma among Indians, all inflammatory conditions of the eyes should be treated, not only to avoid overlooking incipient cases which could not be diagnosed as trachoma on first observation, but also to increase the Indians' confidence in their benefactor.

The record of this demostration shows what can be done among Indians. Already trachoma is present to a menacing degree among the white population in regions where there is much association with Indians. Since the eradication of trachoma can be brought about in no other way than through proper treatment, thereby eliminating the foci of infection, the problem of this disease is bound to increase in magnitude unless treatment is made readily accessible to all infected persons, regardless of race.

MEDICAL SUPERVISION OF PERSONS ENGAGED IN THE PRODUCTION OF CERTIFIED MILK

Ever since the State Board of Health undertook the routine supervision of the production of certified milk in 1917, this Division has co-operated with the Division of Sanitation in this work. Through the medical examination and routine inspection of those directly engaged in the production of certified milk, attempt is made to exclude from such work all persons in an infectious state of an acute or chronic disease, and carriers of disease-producing bacilli. Stress is placed upon typhoid and diphtheria carriers.

The initiate physical examination of each new employe before entrance upon this work is made by a representative of this Division, or by a physician approved by this Division, who furnishes a record of the examination along with a brief history of candidate (see form, page 143), and who also sends to the laboratories separate nose and throat cultures for the detection of diphtheria bacilli, and a blood specimen for the Widal test.

If tuberculosis, syphillis, or other infections are suspected, appropriate specimens are sent in for laboratory examination. If diphtheria or diphtheria-like organisms are present, a virulence test is performed; the candidate is excluded, or not, accordingly.

Candidates giving history of previous typhoid fever, with or without positive Widal reaction, and candidates in whose blood the Widal reaction is present or atypical (unaccounted for by typhoid immunization within two years), are required to submit three sets of feces and urine specimens for the detection of typhoid bacilli. Candidates who give a previous history of typhoid, and whose blood shows a positive or atypical Widal reaction, without history of recent immunization, are excluded regardless of results of feces and urine examination, and candidates whose blood shows a positive or atypical reaction without history of previous typhoid or previous immunization, may be excluded, even though three sets of feces and urine examinations are negative.

Medical inspection of all employes as to their personal hygiene, and the sanitary conditions under which they work and live, is made once a month by a special representative of this Division (physician) who makes a detailed report of his findings, advice, recommendations, etc. (see form, page 143). His visits as a rule are made at milking time and at irregular intervals, so that the date of his visit cannot be anticipated at the dairy.

A copy of the physician's record and history notes, to which the laboratory results of examinations have been added, together with final recommendations as to acceptance or rejection of candidates is promptly sent to the dairy proprietor, the dairy manager, to the physician who makes the examination, if not our representative, and to the Division of Sanitation for its record. Likewise, a summarized report of the monthly inspection with specific recommendations, is sent to proprietor, manager, and the Division of Sanitation.

MEDICAL SUPERVISION OF MILK HANDLERS IN PASTEURIZATION PLANTS AND RAW MILK DAIRIES

Co-operation similar to that given the Division of Sanitation in its supervision of certified dairies is extended, in part, to its supervision of pasteruization plants and raw milk dairies in municipalities which have adopted milk ordinances approved by the State Board of Health and other state departments interested in the supervision of milk supplies. In this work the local health officer is responsible for making the required initiate physical examination of employes, for sending to the laboratory nose, throat, blood specimens, etc., and for submitting physical record and history notes of each employe. Blanks* (see page 143), identical with blanks used for physical records of certified dairy workers, are furnished in quantity, so that besides the copy returned to this Division, the health officer may keep a duplicate, and send a third copy to plant proprietor or milk producer, if desired. Results of laboratory examinations and such recommendations as are necessary are promptly returned to the local health officer upon whom rests the responsibility of enforcing the requirements of the approved ordinance. If required specimens are not received from employes in pasteurization plants, or the record of examination in each case is otherwise incomplete, the local health officer is notified.

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*A similar sheet has been used since 1917 for record of certified dairy workers. Slight modification of the original sheet has made it suitable for record of milk handlers in pasteurization plants and other dairies also.

MINNESOTA STATE BOARD OF HEALTH, DIVISION OF PREVENTABLE DISEASES

PHYSICAL RECORD

....
Name and location of dairy or milk plant.
.................................Sex.........Age....Began work.......................
Name of Applicant.
Duties ....
Nature of work about dairy, milk plant or creamery, e. g., milks, bottles, caps, washes bottles, cans, sterilizes, runs pasteurizer or separator, etc.
Physical examination ....

GENERAL HEALTH

Signs and symptoms of tuberculosis..
Purulent discharge or inflammation of eyes?.....Ears?.....Nose?.....Throat?.....
Is there any Sinus?.........Sore?.........Eruption?.........Desquamation?........ or skin disease?
Condition of teeth?..............................Tonsils?........................
Widal test.....................Has worker had typhoid?..........When?..........
Anti-typhoid inoculation, 1st.................2nd................3rd................
Date last successful vaccination against smallpox..................................
Nose cultures ....
Result and date.
Throat cultures...
Result and date.
Special examination...
Remarks ....

Physical examination by...............
..................................M. D.,
Address ....
Date ....

Worker had following diseases:
Chickenpox, when..............years old
Measles, when................years old
Mumps, when.................years old
Scarlet fever, when...........years old
Smallpox, when...............years old
Diphtheria, when ....years old

(Detail of obverse side of sheet used for monthly inspections.)

MINNESOTA STATE BOARD OF HEALTH, DIVISION OF PREVENTABLE DISEASES

REPORT ON ROUTINE MEDICAL INSPECTION

....Dairy ....Date.........Time.
Have all persons listed on reverse side of sheet passed required medical examination?..........................
Have any persons who have not had the examination been employed in the above mentioned work?........Give names, length of time so employed..............
....
Any recent cases or outbreak of communicable disease among employes or near dairy farm?...........If so, give statement including disposition of cases:....
....
What individual sickness or disability has occurred among employes since last visit? ....
Does each man wash his hands thoroughly with warm water and soap and dry them on a clean towel before starting to milk?................................
Does each man rinse his hands and dry them on a clean towel after milking each cow?.........................
(Signed).....................Owner, Manager, Foreman.
Is it apparent that warm water, soap, towels, etc., are abundantly supplied and adequately used by the men?..........................
Personal hygiene of employees...
Hands, fingernails, clothes, frequency of shaving, etc.
Sanitary condition of dressing and locker room.....................................
Sanitary condition of sleeping quarters...
General sanitary aspect of dairy:
(a) Buildings and equipment...
(b) Methods of milking and subsequent handling..................................
Recommendations ....
....
....
Approved:
......................Director,
Division of Preventable Diseases.
..................................M. D.
Investigator.
Ratings: E, excellent; G, good; F, fair; P, poor.

The reverse side of the above sheet is conveniently arranged to receive names of employes and certain details concerning each, as date of medical examination (in new employes) work detail, both regular and occasional; time off since previous visit of inspector on account of illness, injury or operation; time off for other reason; the existence of communicable disease in family; and space for rating each on the condition of hands, nails, "shaves," and clothes.

PASTEUR INSTITUTE

RABIES EXAMINATIONS

From January 1, 1920, to date of closing, June 30, 1921, the heads or portions of the central nervous systems of 29 lower animals, 25 dogs, 2 cats, 1 chicken and 1 squirrel, suspected of having rabies, were received for examination. There were 17 such examinations made during 1920 and 12 during the first half of 1921. All examinations were negative.

The gradual decline in the number of rabies cases is indicated by the following summary which gives by years since 1907 the total number of examinations, the total number of laboratory proven cases and the number of infected sanitary districts and counties.

*SUMMARY OF RABIES CASES IN MINNESOTA, 1907 to 1921, WITH TOTAL RABIES EXAMINATIONS YEARLY

Year.	Rabies Examinations.	Rabies Cases.	Infected Sanitary Districts.	Infected Counties.
1907	90	65	41	25
1908	69	38	27	20
1909	67	37	22	16
1910	37	21	12	7
1911	41	24	18	11
1912	117	62	38	18
1913	94	39	30	17
1914	48	11	10	6
1915	26	1	1	1
1916	51	11	10	6
1917	51	22	19	11
1918	31	7	4	3
1919	25	5	5	5
1920	17	..	..	..
1921†	12	..	..	..

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*See Fourth Biennial Report for years 1910-11 and 1911-12 for earlier record.

†Six months.

PASTEUR CASES

From January 1, 1920, to date of closing, June 30, 1921, there were 29 persons registered for the antirabic treatment. Twenty-one persons were treated during 1920 and eight during the first six months of 1921. In no instance was the offending animal proven to be rabid. The table below summarizes all cases treated from the opening of the department, August 1, 1907.

SUMMARY OF PERSONS TREATED, AUGUST 1, 1907, TO JUNE 30, 1921

	Bitten			Otherwise Infected			
	Head.	Hands.	Other Parts.	Head.	Hands.	Other Parts.	Total.
Class I	91	473	231	25	251	17	1,088
Class II	13	72	44	14	66	13	222
Class III	87	178	226	3	9	3	506
	191	723	501	42	326	33	1,816

Class I. Laboratory diagnosis in attacking animal positive.
Class II. Clinical diagnosis in attacking animal positive.
Class III. Merely suspected of having rabies.

Six deaths occurred among the 1,816 treated persons. One case developed on fourteenth day of treatment. Five cases developed rabies and died on the 8th, 22d, 58th, 66th and 151st day, respectively, following conclusion of treatment. Details of fatal cases may be found in the Biennial Reports, 1910–12, page 374; 1912–14, page 274; 1914–15, pages 141–2; and Journal of Minnesota State Medical Association, and Northwestern Lancet, February 15, 1910.

REPORT OF LABORATORIES 1920–21

The laboratory work has continued along the same lines outlined in previous reports. The number of examinations during the biennium shows an increase of 25.3 per cent in the Main Laboratory, and 32.2 per cent in the Duluth and St. Louis County Branch Laboratory, over the preceding biennium. The number and kind of examinations by years since and including 1914, for both laboratories, are shown in accompanying tables.

MAIN LABORATORIES

Diphtheria

During 1920, 27,830 specimens, 18,807 for diagnosis and 9,023 for release from quarantine, were examined from 11,615 persons in 627 sanitary districts of 80 counties. In 1921, 35,578 specimens, 24,132 for diagnosis and 11,446 for release from quarantine, were examined from 16,660 persons in 694 sanitary districts of 84 counties. During the biennium, there were reported 7,996 cases of diphtheria of which 3,892 occurred in the Twin Cities. In these Twin City cases, laboratory examinations were made in the Minneapolis and St. Paul city laboratories. Of the remaining 4,104 cases occuring outside of the Twin Cities, a diagnosis of diphtheria was made by examination in the Division laboratories in 3,479 or 85 per cent. Of the remaining 15 per cent, 76 or 1.8 per cent were reported only by death certificate and 13.2 per cent were diagnosed on clinical symptoms, cultures sent in for release from quarantine being negative.

Tests of Virulence of Diphtheria Bacilli

As has been the custom for many years, virulence tests were made on cultures showing B. diphtheriae from persons without symptoms, and also from clinical cases of diphtheria which continued to harbor diphtheria bacilli forty days or longer. In 1920, 383 virulence tests were made, and in 1921, there were 595. Of these, 695 showed the presence of virulent, and 283 of nonvirulent organisms. A tabulation of these cases shows results similar to those previously obtained in our study of 1,082 virulence tests reported in the previous biennial report; (1) diphtheria bacilli isolated from clinical cases of diphtheria and from persons in close contact with clinical cases, are practically always virulent; (2) diphtheria bacilli isolated from well persons not intimately associated with clinical cases are very rarely virulent. By these virulence tests, 283 persons were allowed to be released from quarantine and return to their work or school.

Tonsillectomies

The State Board of Health advises the removal of tonsils, or tonsils and adenoids for relief of the carrier condition in convalescent and recovered cases and in well persons who harbor virulent diphtheria bacilli in their upper air passages. During the biennium observations were made upon results of operation in 40 carriers from 31 sanitary districts of 25 counties and 56 carriers in Aurora Village, St. Louis County, a Mesabe Iron Range town of about 2,800 inhabitants where diphtheria had been present among families of miners for about one year. A small number of the cases were operated upon in the University Hospital, the remainder being done by local physicians. In 38 of the 40 cases from the state at large, the infection disappeared following operation were taken in an average period of 7.8 days after operation, all post operation cultures were negative. Seven cases having one positive culture following operation cleared up in an average of 12.7 days.

In four cases having two positive cultures following operation, infection disappeared in an average period of 27 days while in one case having but two positive cultures, the second being obtained on the 48th day, no later cultures were taken until the 79th day when infection had disappeared permanently. Infection disappeared in 17 days in one case, following three positive cultures and in 22 days in another following four positive cultures.

The remaining two cases for obvious reasons are omitted from the above average. One remained infected in the nose two and one-half months following operation although throat cultures were continuously negative. Following this observation no cultures were taken till the end of five months when no infection remained. In the other case one positive culture only was obtained on the 13th day; no later cultures till the 62d day when infection was no longer present.

In Aurora, tonsillectomy and adenoidectomy were performed on an extensive scale, including children harboring nonvirulent organisms and some in whom diphtheria infection was not present at the time. These studies include only those who were carriers of virulent diphtheria bacilli at the time of operation. Of 56 carriers operated 55 were free from infection in an average of 12.8 days. Of these 48 had no positive cultures following operation, six had one positive and one had three positives, before becoming free. In the remaining case which is excluded from the average no cultures were taken until about six months after operation when no infection remained.

Tuberculosis

During the biennium, 12,694 specimens of sputum were examined in the Main Laboratories, 6,009 in 1920, and 6,687 in 1921. These specimens came from 3,407 persons in 947 sanitary districts of 85 counties in 1920, and from 3,568 persons in 702 sanitary districts of 86 counties in 1921. Tubercle bacilli were demonstrated in 681 cases in 1920, and 680 cases in 1921. Examinations are made for eight county sanatoria, specimens being sent in every month from all patients in these institutions.

Animal Tests for Tubercle Bacilli

Animal tests were made on 190 specimens in 1920, and 382 specimens in 1921. These specimens consisted of spinal, pleural, ascitic, peritoneal, synovial and pericardial fluids, urines, pus, feces, tissue and sputums. Tuberculous infection was demonstrated in 40 spinal fluids, 17 pleural fluids, 17 urines, 13 pus, 1 feces, 9 sputums and 1 tissue. In six specimens only was the examination unsatisfactory due to death of the inoculated animals from intercurrent infection.

Typhoid, Paratyphoid and Dysentery

There were 2,629 blood specimens examined in 1920 and 4,144 in 1921, for the agglutination reaction as an aid or confirmation of diagnosis, or as a lead in the search for carrier. There were also 1,572 specimens examined in 1920, and 2,611 specimens in 1921 from persons receiving typhoid vaccine. In specimens from clinical or suspected cases or carriers, the reaction was present in 444 cases in 1920 and 636 in 1921 and atypical in 118 cases in 1920 and 175 in 1921. In a very high percentage of the cases of typhoid fever reported, the diagnosis is confirmed by examinations of blood specimens made in these laboratories.

Agglutination tests for paratyphoid infection were made in 202 specimens in 1920, and due to the outbreak of paratyphoid fever on the University Campus, there were 1,699 tests made in 1921.

Thirty-two blood specimens were examined for agglutination with B. dysenteriae Shiga or Flexner.

Typhoid, Paratyphoid and Dysentery Isolations

During 1920 there were 678 and in 1921, 1,105 specimens of bowel and bladder discharges including three specimens of duodenal contents, examined for the presence of typhoid, paratyphoid and dysentery organisms. B. typhosus was isolated from 54 stools, one duodenal contents and 12 urines. B. paratyphosus B. was isolated from 42 stools, one duodenal contents and five urines, and B. dysenteriae Shiga was isolated from one stool and B. dysenteriae Flexner from two stools.

TYPHOID CARRIERS

The carriers of typhoid and paratyphoid bacilli who had been identified up to the close of 1917 were reported in the Seventh Biennial Report of the State Board of Health. Below are listed the 27 carriers who have been identified during 1918–19–20–21 with date of identification and brief notes on each case indicating cases traced.

Carrier 58 (January 5, 1918), Mrs. W. E., aged 35, gave history of typhoid fever in 1910. A daughter developed typhoid fever in 1910, the husband and another daughter in 1913, and in 1917, a daughter, a sister and a cousin.

Carrier 59 (February 11, 1918), Mrs. C. A. J., aged 49, gave history of typhoid fever in 1913. The only case traced to her was her daughter who had typhoid in 1917.

Carrier 60 (October 10, 1918), E. D., male, 23, had typhoid fever in 1909. Among his relatives there were four cases in 1910, mother, cousin and two stepbrothers, one of whom died. In 1911, another cousin developed typhoid and in 1912, two associates; in 1913, a cousin, and in 1917, another cousin developed the disease. In 1918, four cases occurred in the family where this man worked, two of whom became carriers. It was at this time that he was identified as a carrier. Since his identification, he caused two cases in 1920 on a farm where he was employed; in 1921, two cases in threshing crew he was with, and incidentally the aunt of one of these cases developed typhoid while nursing the case; and again in 1922 another case occurred in the family of a relative where he was visiting.

Carrier 61 (October 13, 1918), Mrs. J. S., aged 52, had typhoid in 1888. To this carrier were traced five cases, the daughter-in-law, a grandson, and three neighbors, all of whom had been to a picnic with the carrier. One case was fatal.

Carrier 62 (March 6, 1919), H. B. (f) 58, gave history of typhoid fever in 1897. One fatal case developed in her family in 1919.

Carrer 63 (May 1, 1919), A. S. (m) 52, gave no history of typhoid fever. He was cook for a railway construction crew in which nine cases of typhoid fever, including one death occurred.

Carrier 64 (May 9, 1919), Mrs. E. O., aged 67, gave no history of typhoid fever but was proven a carrier after a case developed in house where she was housekeeper.

Carrier 65 (May 23, 1919), J. M. (m) 47, gave history of typhoid fever in 1905. Three brothers developed the disease, one in 1910, one in 1912, and one in 1914. Also in 1914 the mother died of typhoid fever. In 1919, seven cases occurred, six in users of milk from the J. M. farm, and one, the daughter of the housekeeper for J. M.

Carriers 66 and 67 (August 17, 1919), J. C. K. (m) 52, and son, R. K., aged 22, had typhoid in 1918, in July and March respectively infected by carrier 60. One case occurred in farmhand employed on K. farm in 1919.

Carrier 68 (October 3, 1919), Mrs. G. K., aged 29, gave no history of typhoid. Three cases of typhoid fever occurred, one in fall of 1918 and two in 1919, in users of milk supplied by Mrs. G. K.

Carrier 69 (October 26, 1919), E. W. (f) 67, had typhoid in 1900. A relative with whom she was living had typhoid fever in 1902 and a second attack in 1910. A grandson had typhoid in 1908, and in 1919, a granddaughter and a cousin with whom carrier was visiting.

Carrier 70 (November 6, 1919), E. L. (f) 25, gave history of typhoid fever in 1918. On August 9, 1919, she became cook for a threshing crew, and between August 18 and September 18, nine cases had occurred, one of which was fatal.

Carrier 71 (March 6, 1920), Mrs. E. O., aged 57, had typhoid in 1902 and gave history of occasional gall bladder attacks since that time. Two nieces developed typhoid fever in 1906 when carrier was living with them, and in 1920, another niece developed the disease from her aunt.

Carrier 72 (March 20, 1920), Mrs. J. S., aged 43, gave no history of typhoid fever but was proven a carrier following the death from typhoid fever of a young woman employed in her home.

Carrier 73 (March 26, 1920), Mrs. H. A. F., had typhoid fever in 1917. The only case traced to her was a daughter who had the disease in January, 1920. Other members in the family had also had typhoid in 1917 and so were probably immune.

Carrier 74 (May 14, 1920), M. B. (f) 43, had typhoid fever in 1915. One case of typhoid occurred in a surgical patient in a hospital where carrier was a nurse.

Carrier 75 (May 20, 1920), Mrs. H. W., aged 50, gave history of two attacks of typhoid fever, one in 1889 and one in 1896. Late in 1896, a son developed typhoid fever and died. At the time of investigation, Mrs. W. was furnishing milk to her husband's restaurant where she also assisted in the work. Eleven patrons of the restaurant developed typhoid fever, one case being fatal.

Carrier 76 (August 2, 1920), Mrs. G. F., aged 53, had typhoid in 1917. Two cases occurred in her home in the following year, husband and sister-in-law, the latter case proving fatal. Two cases occurred in 1920, one was boarding with Mrs. G. F., and the other was working at the home of the daughter of Mrs. G. F., where Mrs. G. F. was visiting at the time.

Carrier 77 (September 28, 1920), Mrs. J. A. F., aged 45, had typhoid fever in 1907. The only known case traced to her was her son in 1920.

Carrier 78 (November 22, 1920), Mrs. M. K., aged 61, gave no history of having had typhoid fever but nursed her husband through an attack of typhoid in 1905. Her nephew who developed typhoid fever in 1920 while living in the same house is the only case definitely traced to her. Whether she became infected in 1905 while nursing her husband or at some later period or whether she was a carrier at that time and the source of infection in her husband is an open question.

Carrier 79 (December 26, 1920), G. S. (m) 44, had typhoid in 1913. For history see No. 84.

*Carrier 80 (March 18, 1921), Mrs. G. B. S., gave no history of typhoid fever. At time of the investigation, 12 cases of typhoid fever had occurred in users of milk from the S. dairy.

*Carrier 81 (June 9, 1921), Mrs. S. R., aged 65, gave no history of typhoid fever. In April, 1921, 14 cases of typhoid fever with five deaths occurred among men attending a lunch for which carrier had prepared food.

Carrier 82 (November 27, 1921), G. W. (m) 36, had typhoid fever in 1915. In 1917, a brother and a sister, and in 1919, two persons working on the W. farm developed typhoid. In 1921, at the time of the investigation, 18 cases occurred in users of milk from the W. dairy.

*Carrier 83 (December 9, 1921), Mrs. M. S., aged 50, had typhoid in 1918. In 1920 two cases occurred in home where carrier was housekeeper, and a third case in a boy working at the house and having one meal a day there. Two secondary cases occurred from one of these cases. In 1921, two primary and nine secondary cases were traced to her.

*Carrier 84 (December 10, 1921), Mrs. G. S., aged 54, had typhoid in 1905. This carrier and her husband, carrier No. 79, ran a restaurant. In 1920, five cases of typhoid occurred among patrons of the restaurant, and at this time, Mr. G. S. was proven a carrier although evidence pointed to Mrs. G. S. being the source of infection since Mr. G. S. did not directly handle food. Mr. G. S. left town while Mrs. G. S. continued in the restaurant business and in 1921, five more cases (four primary and one secondary), were traced to her.

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*See "Detection of Typhoid Carriers" J. A. M. A. 1922. Volume 79, page 516.

TYPHOID CARRIERS 1918-1921

Case, Age, Sex	Widal Test	B. Typhosus	Years since Typhoid Fever	No. Cases Infected	Members of Family	Employees and Boarders	Relatives	Neighbors	Deaths
58. 35, F.	−	F.	......	6	4	......	2	......	......
59. 49, F.	+	F. & U.	5	1	1	......	......	......	......
60. 22, M.	−	F.	9	19	3	......	5	11	1
61. 52, F.	Vaccinated	F. & U.	30	5	2	......	......	3	1
62. 58, F.	+	F.	22	1	1	......	......	......	1
63. 52, M.	+	F.	......	9	......	......	......	9	1
64. 67, F.	+	F.	......	1	......	1	......	......	......
65. 47, M.	+	F.	14	11	4	......	......	7	1
66. 52, M.	A	F. & U.	1	1	......	1	......	......	......
67. 22, M.	−	U.	1	......	......	......	......	......	......
68. 29, F.	+	F. & U.	......	3	......	......	......	3	......
69. 67, F.	A.	F.	19	5	......	......	5	......	......
70. 25, F.	A.	F.	1	9	......	......	......	9	1
71. 57, F.	+	F.	18	3	......	......	3	......	......
72. 42, F.	+	F.	......	1	......	1	......	......	1
73. F.	+	F.	3	1	1	......	......	......	......
74. 43, F.	A.	F.	5	1	......	1	......	......	......
75. 50, F.	A.	F.	24	12	1	......	......	11	2
76. 53, F.	+	F. & U.	3	4	2	2	......	......	1
77. 45, F.	A.	F.	13	1	1	......	......	......	......
78. 61, F.	Vaccinated	F.	......	1	......	......	1	......	......
79, 44, M.	A.	U.	7	......	......	......	......	......	......
80. 62, F.	+	F.	......	12	......	......	......	12	......
81. 65, F.	+	F.	......	14	......	......	......	14	5
82. 36, M.	+	F.	6	22	2	2	......	18	......
83. 50, F.	+	F. & U.	2	16	......	5	......	11	......
84. 54, F.	+	F. & U.	15	10	......	10	......	......	......

F—feces
U—urine

Typhoid and Paratyphoid Vaccine

During the biennium there was manufactured for free distribution 19,540 cc. plain typhoid vaccine, and 14,280 cc. triple vaccine (typhoid, paratyphoid A and paratyphoid B).

Cerebrospinal Meningitis

One hundred fifty-eight spinal fluids from suspected epidemic meningitis cases were examined during the biennium, 75 in 1920 and 83 in 1921. In 11 the meningococci were demonstrated, in eight streptococci were found to be the infecting organisms, and in seven tubercle baccili were demonstrated.

Poliomyelitis and Encephalitis

There were examined 97 spinal fluids from suspected cases of poliomyelitis and encephalitis, 9 in 1920 and 88 in 1921.

Rabies

The diagnosis of rabies was officially taken over from the Pasteur Institute at its closing June 30, 1921. During the remainder of 1921, the central nervous systems of seven animals (five dogs, one cat, one pig), were examined all with negative results.

Miscellaneous Examinations

Three hundred forty-nine miscellaneous examinations were made. These included nasopharyngeal cultures for meningococci, various foods for B. botulinus, blood cultures and material from many sources for infecting organisms.

Animals Used

In 1920 there were 1,183 guinea pigs and 14 rabbits inoculated, and in 1921, 1,936 guinea pigs and 29 rabbits.

Incidental Work

During the early part of 1920, the Laboratories of the Division of Preventable Diseases supplied the Division of Sanitation with media, but in April, 1920, this service was discontinued as the Divsion of Sanitation at that time took over the preparation of media for its own use. This Division continued throughout the biennium to supply media for the milk and water examinations made for the Division of Sanitation in the Duluth and St. Louis County Branch Laboratory. To the Division of Sanitation direct were furnished 2,353 tubes of media, and to the Duluth and St. Louis County Branch Laboratory for the Division of Sanitation work 3,364 tubes and 59 litres of media.

The following table shows the number of regular outfits that have been shipped to physicians throughout the state.

OUTFITS SHIPPED

	1920.	1921.	Total.
Diphtheria regular outfits	10,673	12,179	22,852
Diphtheria mass culture outfits	19,654	25,349	45,003
Sputum outfits	8,689	8,744	17,433
Widal outfits	5,392	8,107	13,499
Typhoid isolation outfits	596	682	1,278
Diphtheria outfits to Duluth	3,760	7,730	11,490
Diphtheria mass culture outfits to Duluth	15,255	7,975	23,230
Wasserman outfits for division of venereal diseases	15,871	20,202	36,073
Gonococcus outfits for division of venereal diseases	4,588	5,025	9,613
	84,478	95,993	180,471

EXAMINATIONS BY YEARS IN MAIN LABORATORY

	1914	1915*	1916	1917	1918	1919	1920	1921
Diphtheria	23,761	19,378	13,064	30,238	22,550	28,645	27,830	35,578
Tuberculosis	2,004	1,735	2,474	3,518	4,346	5,429	6,009	6,685
Typhoid Fever	3,023	1,446	2,189	1,514	1,362	1,706	2,629	4,144
Paratyphoid	....	....	182	198	86	400	202	1,699
Vir. Tests (Diph.)	220	192	214	317	325	427	383	595
Animal Tests (T. B.)	19	26	76	98	98	186	190	382
B. Typhosus Isol.	293	151	508	600	351	509	678	1,105
Meningococci	19	12	19	512	88	77	75	83
Miscellaneous	30	54	83	53	206	219	94	330
Proph. Widals	8,329	430	7,577	3,065	2,721	3,175	1,572	2,611
Special Widals	91	521	Gonoc	occi	663	571	Rabies	7
Total	37,789	23,945	26,386	40,113	32,798	41,344	39,662	53,219
Average per day	103.5	83.4	72.1	109.9	89.8	113.3	108.4	145.8

* Laboratory closed 78 days—lack of funds.

EXAMINATIONS BY YEARS IN DULUTH AND ST. LOUIS COUNTY BRANCH LABORATORY

	1914	1915	1916	1917	1918	1919	1920	1921
Diphtheria	4,609	3,727	5,569	10,738	7,256	20,415	18,448	19,436
Tuberculosis	830	846	722	819	781	801	810	905
Typhoid Fever	540	411	541	461	295	359	327	322
Proph. Widals	27	29	124	42	48	15	47	1
Miscellaneous	....	1	1	67	15	11	8	17
Milk	535	826	742	585	584	119	5	....
Water	558	648	586	475	558	641	798	1,067
Hypochlorite	22	7	....	....	....	....	....	....
Ice	....	12	1	1	2	2	3	2
Ice Cream	....	....	....	1	5	20	....	....
Total	7,121	6,507	8,286	13,189	9,544	22,383	20,446	21,750
Average per day	19.5	17.8	22.9	36.1	26.1	61.3	55.9	59.6

DULUTH AND ST. LOUIS COUNTY BRANCH LABORATORY

Diphtheria

During 1920, there were examined 18,448 and during 1921, 19,436 cultures for diphtheria bacilli. Of these, 18,687 were made for the city of Duluth, and 19,197 for St. Louis and 10 other counties. The specimens represent 629 positive cases in 1920, and 616 in 1921.

Tuberculosis

Sputum examinations to the number of 1,715 were made, 810 in 1920, and 905 in 1921. Of these, 528 in 1920 and 587 in 1921 were for the city of Duluth and the remainder for St. Louis and eight other counties. These specimens were from 713 cases in 1920 of which 151 showed tubercle bacilli in the sputum, and from 786 cases in 1921, 149 of which gave positive laboratory findings.

Typhoid Fever

During the biennium, 649 specmens were examined for the Widal reaction, 327 in 1920 and 322 in 1921. Of these, 118 in 1920 and 130 in 1921 were for the city of Duluth and the remainder for St. Louis and six other counties. Of the 592 cases represented by these specimens, the Widal reaction was present in 113 and in seven it was atypical. In addition, 47 specimens from persons receiving typhoid vaccine were tested for the Widal reaction.

Miscellaneous Examinations

Twenty spinal fluids were examined for infecting organisms, and seven urines and two pleural fluids were examined microscopically for tubercle bacilli. For the Division of Sanitation there were made in 1920, 798 examinations of water, three of ice and five of milk, and in 1921, there were made 1,067 of water and two of ice.

EPIDEMIOLOGICAL FIELD WORK

During the biennium 680 epidemiological field investigations were made although for more than four months of this period there was but one epidemiologist available.

In 1920 there were 349 field investigations involving 242 sanitary districts in 71 counties, requiring 41,967 miles of travel by rail and 6,113 miles by automobile. For this work 331½ days and 292 nights were spent in the field and in travel.

In 1921 there were 331 field investigations involving 341 sanitary districts in 76 counties, requiring 42,334 miles of travel by rail and 13,843 miles by automobile. For this work 320 days and 248 nights were spent in the field and in travel.

In spite of the large number of investigations made many requests for investigations and assistance in control work could be responded to only by letter when an epidemiologist in the field could have rendered greater service.

ROUTINE EPIDEMIOLOGICAL FIELD INVESTIGATIONS, 1914 TO 1921, INCLUSIVE

	1914	1915	1916	1917	1918	1919	1920	1921
Tuberculosis	66	45	13	17	15	15	20	14
Typhoid fever	70	29	43	58	30	94	106	86
Diphtheria	35	25	17	39	27	53	41	41
Scarlet fever and Measles	48	40	41	54	50	26	38	24
Smallpox and Chickenpox	34	23	17	37	26	34	43	30
Poliomyelitis	5	9	195	35	30	39	16	89
Epidemic meningitis	5	1	1	34	17	12	13	7
Miscellaneous	20	16	17	28	25	39	33	29
Influenza	......	......	......	......	40	9	12	......
Encephalitis	......	......	......	......	......	7	27	11
Total	283	188	344	302	260	328	349	331

TABLE SHOWING COUNTIES AND SANITARY DISTRICTS INVOLVED IN FIELD INVESTIGATIONS, GIVING TIME CONSUMED AND MILEAGE TRAVELED, 1918 TO 1921, INCLUSIVE

	Tuberculosis	Typhoid Fever and Dysentery	Diphtheria	Scarlet Fever and Measles	Sma'lpox and Chickenpox	Poliomyelitis	Cerebrospinal Meningitis	Influenza	Encephalitis	Miscellaneous	Total	Mileage	
												Rail	Auto
1918													
Counties	8	20	20	26	18	20	6	31	....	14	71	37,316	10,475
San. Districts	34	33	37	72	40	33	7	119	....	22	314		
Days	19¾	43½	27¾	123	23¼	30	11¾	97½	....	43½	420		
Nights	15	15	13	34	8	19	3	93	....	35	235		
1919													
Counties	12	40	26	19	23	23	6	8	5	24	68	46,903	4,684
San. Districts	15	76	54	27	45	38	6	13	5	35	234		
Days	18	143	70½	23½	32¾	42¾	8	25¾	5¾	35½	405½		
Nights	14¾	114½	52	12½	24	37	5½	22	3	29	314¼		
1920													
Counties	15	43	24	24	28	13	9	9	19	36	71	41,967	6,113
San. Districts	23	83	44	33	52	16	14	12	25	28	242		
Days	6½	106½	52	28½	40½	14	9½	17½	24	33½	331½		
Nights	4½	93	38½	31	31½	10½	11	15	18	39	292		
1921													
Counties	15	47	24	21	27	44	7	....	8	15	76	42,334	13,843
San. Districts	16	104	53	27	43	139	8	....	12	25	341		
Days	8	79½	62	17½	27	86½	9	....	10½	20	320		
Nights	4	67	44	13½	17½	75½	5	....	9	13	248		

EPIDEMIOLOGICAL FIELD INVESTIGATIONS FOR BIENNIUM ENDING DECEMBER 31, 1919.

POLIOMYELITIS, 1918.

County and Sanitary District.	Index
Aitkin County: Rice River township	189
Beltrami County: Blackduck village	196
Benton County: Sauk Rapids village	188
Brown County:	
North Star township	128
Springfield village	2
Carver County: Chaska city	239
Dakota County: Castle Rock township	184
Douglas County: La Grand township	197
Fillmore County:	
Arendahl township, Holt township, Rushford village	187
Canton township, Newburg township	152
Canton township, Mabel village	178
Canton township, Lanesboro village	177
Harmony village	166
Hennepin County:	
Minneapolis city	51
Minneapolis city	132
Minneapolis city	146
Minneapolis city	180
Minneapolis city	237
Minneapolis city	239
Houston County:	
Spring Grove village, Spring Grove township	166
Spring Grove village, Spring Grove township, Black Hammer township	177
Spring Grove village, Spring Grove township	178
Mille Lacs County: Isle village	57
Mower County: Waltham township	186
Pope County: Glenwood city	198
Ramsey County:	
North St. Paul village	109
North St. Paul village	127
Renville County: Camp township	154
Rice County: Erin township	141
Stearns County: St. Cloud city	188
Todd County:	
Browerville village	150
Bruce township	159
Washington County:	
Stillwater city	53
South Stillwater village	192
Winona County: Richmond township	191

POLIOMYELITIS 1919

Aitkin County:	
Spencer township	203
McGregor township	227
Beltrami County: Bemidji city, Eckles township	246
Benton County: Mayhew Lake township	239
Cass County:	
Maple township, Sylvan township	226
Pine River township	227
Sylvan township	203
Sylvan township	215
Crow Wing County:	
Brainerd city, Crosby village, Unorganized territory	201
Brainerd city	203
Brainerd city	215
Brainerd city	226
Brainerd city, Crow Wing township	227
Brainerd city	289
Crosby village, Brainerd city	173
Crosby village, Brainerd city	176
Riverton village, Brainerd city	179
Dodge County: Milton township	292

County and Sanitary District.	Index
Hennepin County:	
Minneapolis city	90
Minneapolis city	188
Minneapolis city	218
Minneapolis city	231
Minneapolis city	270
Minneapolis city	291
Minnetonka township	59
St. Louis Park village	200
Houston County: Spring Grove village	135
Hubbard County: Nevis village	148
Kittson County: Poppleton township	278
Marshall County: Comstock township	277
Martin County: Fairmont city, Silver Lake township	221
Norman County: Rockwell township	244
Olmsted County:	
Haverhill township	294
Rochester city	181
Otter Tail County: Girard and Henning townships	266
Pipestone County: Jasper village	253
Ramsey County:	
White Bear village	162
White Bear village	169
Renville County: Hector village	96
Rock County: Luverne city	252
St. Louis County:	
Eveleth city	228
Gilbert village	164
Iron Junction village	242
Stearns County: St. Cloud	239
Watonwan County: Madelia village	251
Winona County: Lewiston village	165

EPIDEMIC MENINGITIS 1918

Anoka County: Columbia Heights village	7
Beltrami County: Lee township	164
Freeborn County: Albert Lea township	66
Hennepin County:	
Fort Snelling	34
Minneapolis city	9
Minneapolis city	22
Minneapolis city	35
Minneapolis city	52
Minneapolis city	71
Minneapolis city	75
Minneapolis city	83
Minneapolis city	101
Minneapolis city	153
Minneapolis city	190
Minneapolis city	254
Isanti County: Springvale township	167
Morrison County: Pierz village	95

EPIDEMIC MENINGITIS 1919

Becker County: Lake Park township	281
Dodge County: West Concord village	186
Hennepin County:	
Minneapolis city	8
Minneapolis city	73
Minneapolis city	101
Minneapolis city	149
Minneapolis city	219
Minneapolis city	230
Martin County: Fairmont city	220
Murray County:	
Fulda village	319
Fulda village	327
St. Louis County: Aurora village	93

TUBERCULOSIS 1918

County and Sanitary District.	Index
Dakota County: Green Valley township	111
Hennepin County:	
Minneapolis city	32
Minneapolis city	97
Minneapolis city	181
Minnetrista township	162
Orono township	161
Isanti County: Isanti township	8
McLeod County:	
Acoma township	14
Hutchinson village	86
Mahnomen County: Waubun village	87
Morrison County: Little Falls city	93
Roseau County:	
Soler township	96
Survey (22 sanitary districts)	210
St. Louis County: Township 53-R. 20 unorganized territory	259

TUBERCULOSIS 1919

Benton County: St. Cloud city	205
Cass County:	
Remer township	315
Rogers township	316
Dakota County: Hastings city	107
Hennepin County:	
Greenwood township	180
Minnetrista township	174
Hubbard County:	
Laporte village	202
Nevis village	288
Park Rapids village	147
McLeod County: Hutchinson city	26
Polk County: Andover township	212
Red Lake County: Red Lake Falls city	280
St. Louis County: Midway township (Nopeming Sanatorium)	2
Stearns County: St. Cloud city	205
Steele County: Owatonna city	192
Wright County: Middleville township	110

TYPHOID FEVER, DYSENTERY, AND DIARRHEA, 1918

Anoka County:	
Anoka city	256
Columbia Heights	80
Cottonwood County: Amo township, Rose Hill township	203
Crow Wing County: Ironton village	11
Dakota County: Hastings city	193
Goodhue County: Belle Creek township	156
Hennepin County:	
Golden Valley village	28
Minneapolis city	73
Minneapolis city	82
Minnetonka township	255
LeSueur County: Sharon township	102
Lyon County: Clifton township, Stanley township	204
Marshall County:	
Valley township	23
Mud Lake township, Grygla village	175
Mower County: Lyle village	183
Olmsted County:	
Rochester city	173
Rochester city	185
Otter Tail County:	
Fergus Falls city	36
Fergus Falls township, Fergus Falls city	121
Ramsey County:	
St. Paul city	17
St. Paul city	131
St. Paul city	179

County and Sanitary District.	Index
Red Lake County:	
Red Lake Falls city, River township	37
St. Hilaire village	38
Redwood County: Wabasso village	6
Rice County: Cannon City township, Faribault city	194
Wabasha County:	
Lake City city, Mazeppa village	182
Mazeppa township	185
Washington County:	
Stillwater city	29
Stillwater city	168
Watonwan County: Madelia village	202
Yellow Medicine County: Normania township	79

TYPHOID FEVER, DYSENTERY, AND DIARRHEA, 1919

Beltrami County:	
Bemidji city	83
Blackduck village	130
Tenstrike village, Blackduck village	171
Benton County:	
St. Cloud city	139
St. Cloud city	199
St. Cloud city	204
Watab township	199
Blue Earth County:	
Mankato city	87
Mankato city	211
Carlton County:	
Atkinson township, Twin Lakes township	216
Cloquet City, Knife Falls township	208
Cloquet city, Knife Falls township	217
Cass County:	
Maple and Walden townships	83
Walker village	76
Clay County:	
Barnesville city	142
Morken and Felton townships	324
Crow Wing:	
Brainerd city	79
Brainerd city	83
Brainerd city	126
Dakota County:	
Rosemount township	70
Rosemount township	74
South St. Paul city	306
Goodhue county:	
Minneola township	259
Red Wing city	284
Hennepin county:	
Excelsior township	247
Minneapolis city	36
Minneapolis city	71
Minneapolis city	151
Minnetonka township	91
Hubbard County: Park Rapids village	249
Isanti County. Spencer Brook township	326
Itasca County:	
Keewatin village, Nashwauk village, Coleraine village	241
Nashwauk village	153
Kittson County: Hampden township, St. Vincent village, Hallock village	274
Lincoln County: Verdi village, Verdi township, Lake Benton village	189
Lyon County:	..
Stanley township	116
Stanley township	158
McLeod County: Hutchinson city	138
Marshall County:	
Bloomer township	140
New Solum township	22
New Solum township	168
Oslo village	274
Martin County: Fairmont city	222
Mower County: Windom township, Austin city	258
Murray County: Shetek township	157

County and Sanitary District.	Index
Nicollet County:	
St. Peter city	62
St. Peter city	68
St. Peter city	254
St. Peter city	263
St. Peter city (state hospital)	309
Olmsted County: Rochester city	286
Otter Tail County:	
Aurdal township, Fergus Falls city	221
Fergus Falls city	183
Fergus Falls city	264
Pennington County Thief River Falls city	168
Polk County:	
Crookston city, Fairfax township	167
Crookston city	182
Crookston city	213
Ramsey County: New Brighton village	81
St. Paul city	60
St. Paul city	99
St. Paul city	111
St. Paul city	261
White Bear village	89
Red Lake County: Red Lake Falls city	279
Rice County:	
Cannon city township	287
Faribault city	4
Faribault city	210
Faribault city	275
Roseau County: Warroad village	274
St. Louis County: Aurora village	131
Aurora village	136
Aurora village	143
Ely city	104
Eveleth city	94
Eveleth city	154
Eveleth city	185
Eveleth city, Virginia city	241
Eveleth city	243
Duluth city	105
Great Scott township	45
Hibbing village	14
Hibbing village	44
Hibbing village	47
Hibbing village	229
Hibbing village	232
Hibbing and Buhl villages, Chisholm city	241
Stuntz township	47
Stuntz township	137
Stuntz township	145
Stuntz township	229
Stearns County:	
St. Cloud city	139
St. Cloud city	199
Steele County:	
Owatonna city	191
Owatonna city	276
Stevens County:	
Hancock village	55
Hancock village	156
Swift county: Appleton village, Benson city	195
Appleton village	108
Appleton village	118
Benson city	109
Wadena County: Wadena village	197
Washington County: Stillwater city	187
Watonwan County: Madelia village	250
Winona County:	
Winona city	65
Winona city	75
Winona city	236

DIPHTHERIA 1918

County and Sanitary District.	Index
Anoka County:	
Fridley township	240
Linwood and Bethel townships	21
Blue Earth County: Ceresco and Pleasant Mound townships	148
Crow Wing County: Ironton village	12
Hennepin County:	
Eden Prairie township	151
Golden Valley village	85
Greenwood township	155
Minneapolis city	64
Minneapolis city	240
Minnetonka township	77
Osseo village, Maple Grove township	220
St. Louis Park village	76
St. Louis Park village	91
Hubbard County: LaPorte village, Lake Port township, Hart Lake township	195
Koochiching County: International Falls city	211
Lyon County: Amiret township, Tracy city	238
Mille Lacs County: Princeton village	78
Morrison County: Elm Dale township	172
Otter Tail County: Fergus Falls city	122
Ramsey County:	
Rose township	94
St. Paul city	147
Scott County: St. Lawrence township	140
Sherburne County: Santiago township	78
Stearns County: Holding township	147
St. Louis County: Meadowlands township	242
Swift County: Appleton village	108
Traverse County: Monson and Lake Valley townships	142
Wabasha County: Zumbro Falls village, Gillford township	163
Wilkin County: Foxhome township	133
Wright County: St. Michaels village, Frankfort township	125

DIPHTHERIA 1919

Anoka County: Columbia Heights village	27
Becker County:	
Lakeview township (Shoreham) Callaway village	206
White Earth township	37
Carlton County: Cloquet city	283
Cass County: Boy River township	318
Clay County: Hawley village	77
Crow Wing County: Brainerd city	125
Hennepin County:	
Brooklyn Center village	11
Brooklyn township	58
Minneapolis city	311
Isanti County: North Branch township	225
Kanabec County: Ogilvie village, South Fork township	115
Koochiching County:	
International Falls village	17
International Falls village	33
International Falls village	46
Lyon County: Tracy city	238
Meeker County: Forest Prairie township	121
Murray County:	
Skandia township	117
Skandia township	223
Norman County:	
Gary village, Strand township	214
Waukon township, Gary village	207
Otter Tail County: Henning village, Inman township	38
Pine County:	
Birch Creek township	18
Rutledge village, Hinckley village, Willow River village	170
Willow River village, Hinckley village	177
Pipestone County: Pipestone city	88
Ramsey County:	
North St. Paul village	163
North St. Paul village	233
Rose township	1
St. Paul city	17

Red Lake County:	
Red Lake Falls, Terrebonne, Gervais and Popular River townships	325
Red Lake Falls city	257
Terrebonne township	248
Terrebonne township	273
Rice County:	
Faribault city	5
Faribault city	6
Faribault city	12
Faribault city	34
St. Louis County:	
Aurora village	144
Chisholm village	298
Duluth city	268
Duluth city	296
Fayal township (Leonidas Location)	155
Virginia city	297
Steele County: Owatonna city	196
Todd County:	
Burleene township	175
Iona, Leslie and Burleene townships	160
Staples city	267
Washington County:	
Hugo village	235
Lincoln township	9
Lincoln township	35
Stillwater city	24
Watonwan County: Darfur village, Adrian township	307
Wright County: Annandale village	122

SCARLET FEVER, MEASLES AND GERMAN MEASLES, 1918

Anoka County: Ramsey township	149
Becker County:	
Detroit city, Holmesville and Richwood townships	40
Detroit city, Detroit township	118
Lake Eunice township	16
Spring Creek township	119
Big Stone County: Correll village	107
Carlton County: Lakeview township	19
Cass County:	
May township, Pillager village, Sylvan township unorganized territory	106
May township, Pillager village, Sylvan township unorganized territory	116
Pillager village	13
Dakota County: Hasting city	30
Hastings city, Nininger township	72
Fillmore County: Spring Valley village	3
Hennepin County:	
Independence township, Minnetrista township, Mound village	63
Minneapolis city	1
Minneapolis city, Minnetonka township	33
Minneapolis city	44
Minneapolis city	59
Minneapolis city	68
Houston County:	
Hokah village, Hokah township	114
Hokah village, Hokah township	115
Hokah village	117
Kandiyohi County:	
Atwater village, Gennessee township, Kandiyohi village	56
Harrison township	60
Lac qui Parle County: Lake Shore township	107
LeSueur County: Waterville township	67
McLeod County:	
Glencoe city	43
Bergen township, Biscay village, Glencoe city, Hale township, Hassen Valley township, Helen township, Plato village, Winsted village	46
Hutchinson city	45
Meeker County:	
Acton and Swede Grove townships, Grove City village	60
Manannah township, Eden Valley village	104
Morrison County: Little Falls city	65
Motley, Rosing and Scandia Valley townships	106
Otter Tail County: Maine township, Star Lake township	70
Ramsey County: New Brighton village	81
Rose township, (Farm School)	41
Rose township (Farm School)	74

Rice County: Northfield city	26
Northfield city	31
Webster village	110
Scott County: New Market township	5
Sherburne County: Haven township	48
Stearns County:	
Avon village, Avon township, Collegeville township	24
Sartell village (west), St. Cloud city, Waite Park village	48
Albany village, Albany township, Avon village, Avon township	64
Steele County: Owatonna city	61
Swift County: Appleton township	107
Traverse County:	
Wheaton village	98
Wheaton village	105
Washington County:	
Forest Lake village, Forest Lake township	124
Oneka township	113
Wilkin County:	
Breckenridge city	134
Breckenridge city	144
Campbell village	135
Campbell village	145

SCARLET FEVER AND MEASLES, 1919

Anoka County: Columbia Heights village	209
Benton County: Sauk Rapids village	85
Big Stone County, Akron township	119
Blue Earth County:	
Mankato city, Decoria township	305
Mankato city	308
Chippewa County:	
Woods township	271
Clay County: Oakport and Kragnes townships, Moorhead city	42
Crow Wing County:	
Brainerd city	123
Brainerd city	127
Brainerd city	240
Freeborn County: Glenville village, Albert Lea township	40
Goodhue County: Vasa township	100
Hennepin County: Bloomington township	313
Lincoln County:	
Hendricks village	53
Lake Benton village	190
McLeod County:	
Collins township	30
Hutchinson city	82
Marshall County: Bloomer township	141
Murray County: Fulda village	320
Nicollet County:	
New Sweden and Lake Prairie townships, St. Peter city	86
St. Peter city	69
Olmsted County: New Haven township	56
Otter Tail County: Deer Creek township	39
Redwood County: Kintire township	66
St. Louis County:	
Chisholm village	299
Chisholm village	300

SMALLPOX AND CHICKENPOX, 1918

Aitkin County:	
Dick and Pliny townships, Section 45, Range 25, Unorganized	47
Carlton County: Barnum township	20
Dakota County: Waterford township	27
Faribault County: Winnebago city, Verona township	103
Fillmore County: Spring Valley village	4
Freeborn County: Albert Lea city	174
Goodhue County:	
Cherry Grove township, Kenyon village	89
Red Wing city	39
Hennepin County:	
Bloomington township	247
Eden Prairie township	42
Hassen township, Maple Grove township	62

Hennepin County:	
Hopkins village	84
St. Louis Park village	15
Kittson County: Hill township, St. Vincent township	69
Mahnomen County: Popple Grove township, Waubun village	88
Martin County: Center Creek township	103
Meeker County: Litchfield city	49
Pine County:	
Brookpark village, Brookpark township	231
Chengwatana township, Pine City village	199
Rice County:	
Northfield city	18
Richland township	99
St. Louis County:	
Floodwood village, Halden township	165
Proctor village	55
Stearns County: St. Cloud city, Sartell village (west)	50
Wabasha County: Greenfield township	100
Wright County:	
Cokato village, Cokato township	100
Middleville township	137
Frankfort township	157

SMALLPOX AND CHICKENPOX, 1919

Anoka County: Columbia Heights village	3
Becker County:	
Cuba, Hamden and Lake Park townships, Lake Park village	282
Detroit city	312
Benton County:	
Sauk Rapids village	84
Sauk Rapids village	159
Cass County: Pine River valley	29
Crow Wing County: Brainerd city	290
Goodhue County: Red Wing city	57
Hennepin County:	
Minnetonka township	106
Minnetonka township	113
Minnetrista township	152
Isanti County: Wyanett township	302
Kanabec County:	
Comfort, Knife Lake and Peace townships	19
Comfort township	295
Kanabec township, Ogilvie village, Southfork township	114
Kandiyohi County: Genessee and Harrison townships	328
Koochiching County: Engelwood township	129
Martin County: Truman village	304
Meeker County: Watkins village	166
Norman County: Flom township, Twin Valley village	20
Otter Tail County:	
Fergus Falls city, Fergus Falls township	322
Richville village	23
Elizabeth village	323
Ramsey County: North St. Paul village	132
Sherburne County:	
Clear Lake village	32
Haven township	31
Stearns County: St. Cloud city	84
Steele County: Owatonna city	41
Traverse County:	
Croke township	184
Wheaton village	64
Wabasha County: Wabasha city	102
Wadena County: Wadena village	198
Washington County:	
Lincoln township	10
New Scandia township	98
Stillwater township	103
St. Paul Park village, Newport township	314

INFLUENZA, 1918

- Beltrami County: Bemidji city 234
- Benton County:
  - St. Cloud city, Sauk Rapids village 223
  - Sauk Rapids village 232
- Carlton County:
  - Clear Creek township 228
  - Holyoke township 252
  - Moose Lake village 218
- Chippewa County: Granite Falls city 209
- Cottonwood County:
  - Amboy township, Dalton township, Jeffers village, Storden township, Westbrook village, Westbrook township, Windom village 217
  - Bingham Lake village, Jeffers village, Mountain Lake village, Windom village 229
- Crow Wing County:
  - Brainerd city, Crosby village, Ironton village 241
  - Brainerd city 244
- Faribault County:
  - Wells village 201
  - Blue Earth city, Winnebago village, Verona township 207
  - Minnesota Lake village 230
  - Frost village 260
- Fillmore County: Fillmore and Fountain townships, Wykoff village 214
- Grant County: Barrett, Elbow Lake, Herman, Norcross and Wendell villages; Elbow Lake, Gorton, Lawrence and Logan townships 219
- Itasca County: Wawina township 258
- LeSueur County:
  - Montgomery village, Montgomery township 233
  - New Prague city 250
- Lyon County: Marshall city 221
- Martin County: Welcome village 206
- Morrisson County: Motley village 224
- Otter Tail County: Blowers, Deer Creek, Homestead, Leaf Lake, Newton and Otto townships, New York Mills village 235
- Pine County:
  - Arna, Clover, Dosey, Kerrick and Wilma townships, Bruno village 213
  - Bruno village, Fleming and Partridge townships 218
  - Bruno, Duquette, Kerrick and Nickerson villages, Bruno, Kettle River and Norman townships 228
  - Brook Park village, Brook Park township 231
  - Sturgeon Lake village, Willow River village 253
- Pipestone County: Pipestone city 248
- Polk County: Crookston city, Fosston village 234
- Pope County: Glenwood city, Lowry and Villard villages 234
- Red Lake County: Red Lake Falls city 234
- Renville County:
  - Hawk Creek township 209
  - Bird Island village 222
- Rice County: Northfield city 241
- Scott County: Jordan city 250
- Stearns County:
  - Albany and Richmond villages, Fanning township, Wakefield township 208
  - St. Cloud city, Waite Park village 223
  - Brockway, Holding and Krain townships, Holdingford village 236
- Stevens County:
  - Hancock village, Morris city 234
  - Hancock village, Morris city 251
- St. Louis County:
  - Aurora, Biwabik, Buhl, Chisholm, Embarrass, Gilbert, Hibbing, Kinney, Mt. Iron and Proctor villages, Duluth, Ely, Eveleth, Tower and Virginia cities, Fayal and Nichols townships, Cook village and vicinity 257
  - Meadowlands village 241
- Wabasha County:
  - Highland and Plainview townships, Plainview village 215
  - Mazeppa village 226
  - Plainview village 225
- Waseca County: Janesville village 216
- Watonwan County:
  - Madelia village 246
  - Madelia village 249
- Wilkin County: Breckenridge city 234
- Yellow Medicine County: Granite Falls city, Minnesota Falls and Stony Run townships 209

INFLUENZA, 1919

Big Stone County: Clinton village, Prior township	7
Itasca County: Nashwauk village	13
Kanabec County: Pomroy township	97
Koochiching County: Pinetop township	13
McLeod County: Hutchinson city	25
Marshall County: Alvarado village	21
Norman County: Gary village	28
St. Louis County: Orr village, Pelican Point, Nett Lake Ind. agency	63
Scott County: New Market village	16

MISCELLANEOUS, 1918

Becker County:	
Richwood township	120
White Earth Reservation	158
Beltrami County: Red Lake Indian Agency	171
Carlton County:	
Cloquet city	171
Moose Lake village	212
Cass County: Bena village	130
Cook County: Grand Marais village, Grand Portage	169
Hennepin County:	
Fort Snelling	112
Fort Snelling	139
Fort Snelling	143
Fort Snelling	200
Fort Snelling	243
Minneapolis city	10
Minneapolis city	58
Minneapolis city (University of Minnesota)	138
Minneapolis city	243
Richfield village	123
Wayzata village	205
Itasca County: Deer River village, Grand Rapids city, Nashwauk village	130
Koochiching County: Nett Lake Agency	170
Mahnomen County: White Earth Indian Reservation	158
Nicollet County: St. Peter city (hospital)	129
Ramsey County:	
Rose township	92
Rose township	126
Rose township, St. Paul city	200
St. Paul city	176
St. Louis County:	
Nett Lake Agency	170
Duluth city	171
Swift County: Benson city	25
Wilkin County: Campbell village	136
Dunn County, Wis: Downing village	90

MISCELLANEOUS, 1919

Anoka County: Columbia Heights village	133
Betrami County: Summit township	172
Cass County: Remer village	317
Carlton County: Cloquet city	72
Chippewa County, Montevideo city	178
Crow Wing County:	
Brainerd city	124
Brainerd city	128
Brainerd city	310
Fillmore County: Jordan township	256
Goodhue County:	
Red Wing city	285
Zumbrota village	293
Grant County: Lien township	134
Hennepin County:	
Minneapolis city	61
Minneapolis city	161
Minneapolis city	194
Minneapolis city, Robbinsdale village	272
Minnetonka township	120
Robbinsdale village	150
West Minneapolis village	92

Kandiyohi County: Genessee township	234
Le Sueur County: Cordova township	262
Mahnomen County: Mahnomen village	245
Mille Lacs County: Princeton village	303
Nicoilet County:	
St. Peter city (Hospital)	15
St. Peter city	67
Olmsted County: Rochester city	193
Otter Tail County: Fergus Falls city	265
Pine County: Wilma township	112
Ramsey County:	
St. Paul city	78
St. Paul city	269
St. Paul city	51
St. Paul city	272
White Bear village	146
Redwood County: Lamberton township	224
St. Louis County:	
Aurora village, Virginia city, Hibbing village, Duluth city, Gilbert village and Eveleth city	95
Buhl village	301.
Steele County: Owatonna city	41
Stevens County: Hodges township	43
Watonwan County: Fieldon township	80
Winona County: Winona city	237

EPIDEMIOLOGICAL FIELD INVESTIGATIONS FOR BIENNIUM ENDING DECEMBER 31, 1921

POLIOMYELITIS, 1920

Blue Earth County: Mankato city	179
Crow Wing County: Rabbit Lake township	253
Cottonwood County: Amo township	291
Douglas County: Osakis village	285
Hennepin County:	
Minneapolis city	64
Minneapolis city	343
West Minneapoils village	299
Houston County: Caledonia village	272
Lyon County: Tracy city	256
Marshall County: Argyle village	246
Ramsey County: St. Paul city	259
Renville County: Olivia village, Kingman township	275
St. Louis County: Breitung township (Soudan Location)	316
Stearns County:	
St. Cloud city	20
Brooten village	287
Washington County: South Stillwater village	315

POLIOMYELITIS, 1921

Anoka County: Ham Lake township	197
Becker County:	
Green Valley township	129
Runeberg township	144
Detroit city, Erie township	184
Atlanta township	211
Lake View township	242
Lake Park township	272
Beltrami County:	
Bemidji city, Wilton village	200
Renville township	239
Blue Earth County:	
Mankato city	202
Mankato city	252
Carlton County: Eagle township	133
Cass County:	
McKinley township	139
Ansel, McKinley and Poplar townships	144
Pillager village	174
Becker township	189
Clearwater County: Shevlin village	201

Cottonwood County: Selma township ... 209
Crow Wing County: Brainerd city ... 138
Dodge County: West Concord village, Concord township ... 175
Douglas County: Alexandria City ... 187
Faribault County: Verona township ... 251
Fillmore County: Rushford city ... 165

Hennepin County:
  Hopkins village ... 111
  Brooklyn township ... 132
  St. Louis Park village ... 154
  Minnetonka township, Hopkins village ... 192
  Hassan and Corcoran townships ... 197
  Minneapolis city ... 229
  Hassan township ... 250

Houston County:
  Brownsville village, Caledonia village ... 227
  Caledonia village, Caledonia township ... 244

Hubbard County:
  Park Rapids village ... 81
  Park Rapids village ... 128
Lyon County: Tracy city, Custer township ... 216

Mahnomen County:
  Marsh Creek and Pembina townships ... 172
  Bejou township ... 180
  Lake Grove township ... 213

Marshall County: Warren city ... 237
Martin County: Fairmont city ... 269
Meeker County:
  Manannah and Dassel townships ... 194
  Dassel, Kingston and Manannah townships ... 249
Mille Lacs County: Princeton village ... 148
Morrison County:
  Motley township ... 189
  Bellevue and Ripley townships ... 273
Murray County:
  Murray township ... 88
  Iona village ... 218
Nobles County: Worthington city ... 231
Norman County:
  Ada city, Spring Creek, Lockhart and Mary townships ... 130
  Lockhart, McDonaldsville and Spring Creek townships ... 141
  Ada city, Gary village, Hegne and Winchester townships ... 161
  Green Meadow and Pleasant View townships ... 173
Olmsted County: Dover village, Eyotca township ... 166
Otter Tail County:
  Homestead township ... 139
  Blowers and Paddock townships ... 144
  Perham village ... 153
  New York Mills village ... 160
  Oak Valley township ... 169
  Deer Creek township ... 170
  Henning and Leaf Lake townships ... 171
Pennington County: Clover Leaf township ... 239
Pine County:
  Pine Lake township ... 162
  Willow River village, Bremen township ... 206
Polk County: Garfield township ... 181
Ramsey County: St. Paul city ... 131
Red Lake County: Red Lake Falls township ... 190
Redwood County:
  Morgan village, Faxton township ... 203
  Revere village, Waterbury township ... 215
  Sherman township ... 233
  Swede Forest township ... 268
  Redwood Falls city ... 271
Renville County:
  Cairo and Wellington townships ... 198
  Bird Island village ... 210
  Morton village ... 233
  Franklin village ... 271
Rice County: Northfield city ... 176
Sibley County:
  Arlington village ... 167
  Grafton township ... 208

Stearns County:	
Melrose village, New Munich village, Paynesville village, Grove township.	153
Eden Lake township	194
Eden Lake township	249
Todd County:	
Staples township	140
Litttle Sauk township	145
Long Prairie village, Kandota and Leslie townships	153
Hartford township	168
Bartlett, Bertha and Stowe Prairie townships	169
Bartlett township	182
Villard township	189
Round Prairie township	234
Long Prairie village	235
Traverse County: Taylor township	186
Wadena County:	
Blueberry township	129
Rockwood township	139
Menahga, Nimrod, Sebeka, Verndale and Wadena villages, Lyons, Orton, Red Eye and Rockwood townships	144
Wadena village, North Germany and Rockwood townships	157
Verndale village	158
Wadena village, Leaf River township	170
Wadena village, Leaf River township	191
Sebeka and Wadena villages, Red Eye township	246
Wadena and Sebeka villages, Meadow township	248
Washington County:	
New Scandia township	207
Stillwater city	217
Wright County:	
Cokato village, Cokato township	155
Delano and South Haven villages, Middleville and French Lake townships	193
Buffalo village	228
Cokato village	247
Cokato and South Haven villages, Cokato and French Lake townships	249
Yellow Medicine County: Minnesota Falls township	281

EPIDEMIC CEREBROSPINAL MENINGITIS, 1920

Blue Earth County: Mankato city	55
Brown County:	
North Star township	56
Stately township	274
Hennepin County:	
Minneapolis city (University of Minnesota)	65
Minneapolis city	97
Minneapolis city	326
Murray County:	
Iona township, Iona Lake village	29
Fulda village	8
Nobles County:	
Adrian village	12
Summit Lake township	60
Pipestone County: Jasper village	46
Redwood County: Sundown township	56
St. Louis County: Hibbing village	101
Washington County: Hugo village	237

EPIDEMIC CEREBROSPINAL MENINGITIS 1921

Hennepin County: Minneapolis city	230
Lyon County: Tracy city	30
Meeker County: Eden Valley village	266
Murray County: Shetek township	28
Polk County: Crookston city	257
Stearns County:	
St. Cloud city	127
Eden Valley village	266
Wadena County: Sebeka village	120

EPIDEMIC ENCEPHALITIS, 1920

Brown County: Springfield village	77
Crow Wing County: Brainerd city	149
Cottonwood County:	
Windom village	28
Lakeside township	238
Fairbault County: Verona township	45
Freeborn County: Albert Lea city	2
Goodhue County: Red Wing city	166
Hennepin County:	
Minneapolis city	92
Minneapolis city	103
Koochiching County: International Falls village	87
Lake County: Two Harbors city	116
Meeker County: Manannah township	49
Mower County: Lyle village	3
Murray County:	
Fulda village	18
Fulda village, Des Moines township	30
Slayton village	168
Nobles County: Bigelow township	109
Otter Tail County: Fergus Falls city	107
Ramsey County:	
St. Anthony township	63
St. Paul city	76
Redwood County: Sundown township	56
Rice County: Faribault city	233
St. Louis County:	
Duluth city	99
Duluth city	115
Duluth city	165
White township	298
Steele County:	
Ellendale village	6
Owatonna city	193

EPIDEMIC ENCEPHALITIS 1921

Brown County: Springfield village	14
Clay County: Highland Grove township	152
Dodge County: Mantorville township	25
Fillmore County:	
Mabel village, Newburg township	27
Rushford city	275
Hennepin County:	
Minneapolis city	23
Minneapolis city (University Hospital)	29
Murray County:	
Slayton village	87
Slayton township	232
Nobles County: Adrian village	43
Pennington County: Thief River Falls city	118

TUBERCULIOSIS 1920

Beltrami County:	
Baudette village	84
Bemidji city	95
Crow Wing County:	
Brainerd city	148
Kandiyohi County:	
Atwater village	184
Lyon County: Tracy village	73
Marshall County: Esplee township, Grygla village	150
Olmsted County:	
Rochester city	143
Rochester city	144
Otter Tail County:	
Dane Prairie township, Fergus Falls city	108
Paddock township	229
Aurdal township	342
Polk County: Winger township	293
Red Lake County: Gervais township	294
Rice County: Northfield city	232

Scott County:	
Shakopee city	263
Shakopee city	276
Stearns County: Albany township	182
Steele County: Owatonna city	111
Wadena County:	
Blueberry township	229
Wadena village	47
Watonwan County: Rosendale township, Madelia township	178

TUBERCULOSIS 1921

Beltrami County: Durand township (Lake Julia Sanatorium)	20
Chippewa County: Montevideo city	94
Clay County: Dilworth village	293
Douglas County: Alexandria city	188
Hennepin County: Crystal village	1
Isanti County: Stanford township	82
Kanabec County: Mora village	149
McLeod County: Brownton village	3
Marshall County: Comstock township, (Radium village)	238
Meeker County: Eden Valley village	5
Mille Lacs County: Milaca township	84
Nobles County: Round Lake village	259
Scott County: Jordan city	164
Sherburne County: Baldwin township	82
Steele County: Owatonna city	115

TYPHOID FEVER, DYSENTERY AND DIARRHEA, 1920

Aitkin County: Logan township	123
Anoka County: Centreville township	239
Becker County: Spruce Grove township	348
Beltrami County:	
Bemidji city	51
Baudette village	83
Bemidji city	89
Bemidji city	241
Bemidji city	295
Nebish township, Bemidji city	331
Bemidji city	332
Blue Earth County:	
Mankato city, Madison Lake village	57
Mankato city	80
Mankato city	180
Mankato city	236
Mankato city	257
Mankato city	289
Brown County:	
New Ulm city	156
Springfield village	58
Crow Wing County:	
Brainerd city	161
Deerwood township	181
Dakota County: Egan township	251
Goodhue County:	
Red Wing city:	118
Holden township	213
Red Wing city	266
Hennepin County:	
Minneapolis city	98
Independence and Minnetrista townships	202
Independence and Minnetrista townships	208
Orono township	287
Bloomington township	305
Brooklyn Center village, Minneapolis city	312
Minneapolis city, Brooklyn Center village	338
Brooklyn Center village	345
Isanti County: Braham village	278
Kanabec County: Comfort township, Mora village	215
Koochiching County:	
International Falls village	333
Ranier village	334

- Lac qui Parle County:
  - Freeland township 288
  - Freeland township 307
- Lake County: Two Harbors city 267
- Le Sueur County: New Prague city 277
- Lyon County:
  - Marshall city 273
  - Marshall city 344
- McLeod County: Hutchinson city 279
- Morrison County: Royalton village 283
- Mower County: Austin city 113
- Murray County: Iona and Fenton townships 61
- Nicollet County: Lafayette township 157
- Nobles County: Bigelow township 310
- Olmsted County:
  - Rochester city 142
  - Rochester city 234
  - Rochester city 269
- Otter Tail County:
  - Fergus Falls city 106
  - Fergus Falls city 174
  - Deer Creek village 206
  - Fergus Falls city 340
  - Perham village 348
- Pennington County:
  - Thief River Falls city 151
  - St. Hilaire village 212
  - Thief River Falls city 243
- Polk County:
  - Crookston city 292
  - Higdem township 262
  - Crookston city 134
- Ramsey County::
  - Rose township 169
  - New Canada township 239
  - St. Paul city 258
  - New Canada township 264
- Red Lake County: Red Lake Falls township 132
- Redwood County: Redwood Falls city 255
- Renville County: Buffalo Lake village, Renville city 41
- Rice County: Wells township, Faribault city 302
- St. Louis County:
  - Virginia city 82
  - Duluth city 100
  - Hibbing village, Duluth city, Township 54, Range 20, Section 12 102
  - Duluth city 114
  - Floodwood village 124
  - Hibbing village 140
  - Duluth city 141
  - Duluth city, Smithville village 167
  - Eveleth city, Gilbert village 194
  - Hibbing village 216
  - Biwabik township 224
  - Hibbing village 218
  - Duluth city 219
  - Virginia city 220
  - Duluth city 247
  - Hibbing village 281
  - Aurora village 282
  - Section 12, township 62, range 21 314
- Stearns County: St. Cloud city 324
- Steele County: Merton township 7
- Wadena County:
  - Leaf River township 187
  - Rockwood township 188
  - Sebeka village, Wadena village, Leaf River township 207
  - Wadena village 230
- Waseca County: Janesville village 290
- Washington County: Grant township (East Shore Park) 239
- Watonwan County:
  - St. James city 62
  - St. James city 176
  - Madelia village 177
  - Madelia village 237
  - Madelia village 311

Wilkin County:	
Breckenridge city	26
Breckenridge city	104
Connelly township	162
Connelly township	173
Bradford township	319
Brandrup township	341
Winona County: Winona city	265
Wright County: Maple Lake township	301
Yellow Medicine County:	
Canby city	288
Canby city	307

TYPHOID AND PARATYPHOID FEVER, DYSENTERY AND DIARRHEA, 1921

Becker County:	
Spruce Grove township	17
Detroit city	183
Detroit city, Erie and Lakeview townships	185
Spring Creek township	212
Beltrami County:	
Bemidji city	18
Northwood township	92
Bemidji township	199
Lee township	240
Bemidji city, Northern township	255
Durand township, (Lake Julia Sanitorium)	286
Durand township (Lake Julia Sanitorium)	307
Benton County: Sauk Rapids village, Watab township	305
Blue Earth County:	
Lake Crystal village	124
Lake Crystal village, Judson township	314
Mankato township	318
Carver County: Chanhassen township	122
Cass County: Shingobee township	33
Clay County: Moorhead city	45
Cottonwood County: Mountain Lake village	315
Crow Wing County: Brainerd city	137
Dakota County:	
Hastings city	54
Farmington village	311
Farmington village, Lakeville village, Lakeville township	107
Mendota township	121
South St. Paul city	147
Waterford township	177
Rich Valley village	267
Rosemont village, Farmington village, Lakeville and Lebanon townships	290
Faribault County:	
Wells village	73
Winnebago city	276
Fillmore County:	
Spring Valley village	72
Mabel village, Canton township	224
Holt township	245
Freeborn County: Albert Lea city	113
Goodhue County:	
Red Wing city	59
Kenyon village	71
Hennepin County:	
Plymouth township	80
Richfield village	114
Eden Prairie township	122
Kanabec County: Ogilvie village	62
Kandiyohi County: Willmar township (State Asylum)	280
Kittson County: Donaldson village	39
Koochiching County:	
International Falls village	297
Ranier village	298
Lac qui Parle County: Madison city	277
Lake County: Two Harbors city	313
Mahnomen County: Mahnomen village, Pembina township	119

Marshall County:	
West Valley township	41
New Solum and Excel townships	72
Excel and New Solum townships	116
Grygla village	117
Stephen village	214
New Solum township	240
Eckvoll township	302
Oslo village	303
Martin County: Fairmont city, Fraser township	74
Morrison County: Buh township	220
Mower County: Austin city	225
Nicollet County: St. Peter city	125
Norman County: Fossum township	119
Otter Tail County: Henning village	61
Pennington County:	
St. Hilaire village, Sanders township	40
Thief River Falls city	41
Norden township	92
North township	116
Thief River Falls city	240
Pine County: Askov village, Sandstone village	63
Polk County: Crookston city	51
Ramsey County:	
St. Paul city	121
St. Paul city	147
Red Lake County:	
River township	40
Red Lake Falls city	52
Redwood County: Redwood Falls city	328
Rice County: Northfield city	77
Rock County:	
Luverne city	316
Luverne city	325
Scott County:	
Shakopee city	122
Shakopee city	134
Sibley County: Faxon township	70
St. Louis County:	
Ely city	65
Eveleth city	66
Hibbing village	67
Argo township (Babbitt Loc.)	313
Stearns County:	
Luxemberg township	7
Melrose city	60
St. Cloud city	222
St. Cloud city, St. Joseph village	223
St. Cloud city, St. Joseph village, St. Joseph township	265
St. Cloud city	317
Steele County: Owatonna city	143
Todd County: Long Prairie village	64
Wadena County:	
Wadena village	287
Wadena village, Leaf River, North Germany and Rockwood townships	289
Wadena village	291
Rockwood township	321
Wadena village	322
Washington County: St. Paul Park village, Newport village	146
Watonwan County: Madelia village	124
Wright County:	
Buffalo village	69
Stockholm township	136

DIPHTHERIA, 1920:

Aitkin County:	
Dick township	210
Anoka County: Fridley township	349
Benton County: Sauk Rapids village	270
Crow Wing County:	
Brainerd city	32
Brainerd city, Lake Edward township	147
Dakota County:	
South St. Paul city	137
Greenvale township	303

Hennepin County: Bloomington township ... 19

Itasca County:
  Wawina township ... 280
  Wawina township ... 297

Mower County: Austin city, Austin township ... 268
Nicollet County: St. Peter city ... 91
Nobles County: Round Lake village ... 308
Norman County: Waukon township ... 205
Pine County: Willow River village, Windermere township ... 209
Pipestone County: Pipestone city, Elmer township, Sweet township ... 346
Polk County: East Grand Forks city ... 133

Ramsey County:
  Mounds View township ... 138
  Rose township ... 154

Red Lake County:
  Red Lake Falls city, Terrebonne township ... 131

Rice County:
  Dundas village ... 66
  Northfield city ... 303
  Faribault city ... 304

St. Louis County:
  Cook village, Owens township ... 23
  Chisholm village ... 24
  Eveleth city ... 196
  Virginia city ... 197
  Chisholm village ... 198
  Hibbing village ... 200
  Eveleth city, Chisholm village, Hibbing village, Virginia city ... 223
  Ely city, Winton village ... 313
  Aurora village ... 317
  Chisholm village ... 318

Stearns County:
  St. Cloud city ... 4
  Albany township ... 183
  St. Cloud city ... 254

Steele County: Owatonna city ... 67
Todd County: Kandota township ... 126

Wadena County:
  Blueberry and Shell River townships ... 228
  Blueberry township ... 261
Wilkin County: Breckenridge city ... 27
Wright County: South Haven village ... 271

DIPHTHERIA, 1921

Anoka County:
  St. Francis township ... 10
  Columbia Heights village ... 38
Beltrami County:
  Bemidji city, Bemidji township ... 285
  Bemidji city, Redby village ... 299
Benton County: Sauk Rapids village ... 221
Cass County: Birch Lake township ... 34
Clay County:
  Dilworth village ... 89
  Glyndon village ... 159
Clearwater County: Sinclair township ... 299
Dakota County:
  Castle Rock township ... 178
  Hampton village ... 288
Hennepin County:
  Minneapolis city ... 100
  Minnetrista township ... 26
  Crystal Lake village ... 262
  Minneapolis city (University Hospital) ... 324
Isanti County: Stanford township ... 10
Jackson County:
  Kimball township ... 195
  Round Lake township ... 263
Lincoln County: Tyler village ... 327
Morrison County:
  Little Falls city ... 219
  Little Falls city ... 282

Mower County: Marshall and Dexter townships	226
Nicollet County: St. Peter (State Hospital)	106
Nobles County:	
Round Lake village	258
Round Lake village	263
Otter Tail County:	
Parkers Prairie village, Henning village, Parkers Prairie, Eastern, Elmo, Folden and Nidaros townships	98
Fergus Falls city, Buse township	99
Perham village, Gorman township	270
Pine County:	
Dell Grove township	15
Dosey township	50
Dosey township	108
St. Louis County:	
Aurora village	2
Virginia city, Chisholm village	109
Ely city	243
Aurora village, Mesaba village	260
Scott County: Blakeley township	196
Stearns County:	
St. Cloud City, Waite Park village	264
St. Cloud city	306
Swift County: Appleton village	283
Wadena County: Wadena village	100
Washington County:	
Lincoln township	13
Lincoln and Grant townships	91
Wright County:	
Cokato village	58
French Lake township	135

SCARLET FEVER, MEASLES AND GERMAN MEASLES, 1920

Becker County: Frazee village	339
Beltrami County:	
Bemidji city	54
Bemidji city	90
Bemidji city	94
Bemidji city	121
Chippewa County: Maynard village, Stoneham township, Leenthrop township	9
Clay County: Kragnes township	245
Crow Wing County:	
Brainerd city	96
Brainerd city	146
Clearwater County: Bagley village	88
Dakota County:	
South St. Paul city	129
South St. Paul city	136
South St. Paul city	152
Hastings city, Nininger township	337
Faribault County:	
Minnesota Lake village	112
Freeborn County: Albert Lea city	44
Goodhue County: Kenyon village	22
Hennepin County:	
Minneapolis city (University of Minnesota)	39
Wayzata village	227
Hubbard County: Park Rapids village	48
Itasca County: Trout Lake township	226
Koochiching County: International Falls village	85
Marshall County: Holt village	190
McLeod County: Hutchinson city	145
Mower County:	
Austin city	158
Windom township	192
Otter Tail County: Perham village, Pine Lake and Perham townships	347
Ramsey County: Rose township (University Farm School)	75
Renville County:	
Renville village	10
Renville village	40

St. Louis County:	
Chisholm village	25
Chisholm village	199
Eveleth city	225
Steele County:	
Owatonna city	69
Owatonna city	110
Traverse County:	
Wheaton village	163
Wheaton village	172
Wilkin County: Breckenridge city	105

SCARLET FEVER AND MEASLES 1921

Aitkin County: Tamarack village	319
Blue Earth County: Mankato city	309
Carlton County: Holyoke township	110
Clay County: Moorhead city	294
Dakota County: Hampton village	46
Hennepin County:	
Minnetonka township	49
Minnetonka township	105
Kandiyohi County: Atwater village	57
Marshall County: Warren city	304
Meeker County: Eden Valley village	4
Mille Lacs County: Wahkon village	85
Nicollet County: North Mankato village	310
Pine City: Sandstone village	254
Pipestone County: Ruthton village, Aetna township	326
Ramsey County: Rose township, (University Farm)	9
Rose township (State Fair Grounds)	79
Renville County: Franklin village	93
Sherburne County:	
Becker village	36
Santiago township	86
St. Louis County:	
Duluth city	110
Owens township (Cook village)	284
Stearns County:	
Forest Prarie township	4
Melrose village	323
Todd County: Kandota township	12
Traverse County: Dollymount township	96
Washington County: Forest Lake village	179

SMALLPOX & CHICKENPOX, 1920

Aitkin County: Hill City village	242
Anoka County:	
Centreville township	260
Anoka township	325
Becker County: Lake Park village	35
Beltrami County: Red Lake Indian Agency	330
Benton County: Glendorado township	323
Blue Earth County: Mapleton village, Mapleton township, Beauford township	78
Douglas County: Ida township	117
Goodhue County:	
Kenyon village	11
Red Wing city	119
Grant County:	
Elbow Lake village	14
Elbow Lake village	16
Hennepin County:	
Minneapolis city (University Hospital)	74
Minneapolis city	93
Wayzata village	128
Minneapolis city	203
Minneapolis city	221
Minneapolis city	240
Minneapolis city	250
Golden Valley village, Plymouth township	320
Lake County: Fall Lake township	164
LeSueur County: Kasota village	204
McLeod County: Winsted village	336

Meeker County: Litchfield village, Litchfield township, Union Grove township	160
Mille Lacs County: Milaca village	214
Mower County:	
Austin city	155
Windom township	170
Windom township, Udolpho township, Austin city	191
Nobles County: Adrian village	222
Pine County: Royalton township, Rock Creek township, Greeley village	36
Ramsey County:	
White Bear, village	306
North St. Paul village	322
Renville County: Crooks township	42
Rice County: Nerstrand village	11
Roseau County: Warroad village, America, Clear River, Moreauville and Cedar Bend townships	335
St. Louis County:	
Floodwood village	125
Hibbing village	211
Scott County: Belle Plaine Borough	250
Sherburne County: Becker village, Palmer and Santiago townships	323
Stearns County:	
St. Cloud city	5
Wakefield township	130
St. Cloud city	175
St. Cloud city	189
Melrose city	321
Swift County: Kerkhoven village	72
Washington County: Newport township	1

SMALLPOX AND CHICKENPOX, 1921

Anoka County:	
St. Francis township	35
Bethel village	90
Beltrami County: Blackduck village	19
Big Stone County: Ortonville city, Ortonville township, Big Stone township	8
Brown County: Comfrey village	75
Cass County: Pine River village, Walden township	32
Clay County:	
Hawley village	16
Glyndon village, Spring Prairie township	44
Dilworth village, Moorhead township	292
Moorhead city	295
Cottonwood County: Selma township	75
Fort Snelling U. S. A	126
Goodhue County: Red Wing city	11
Hennepin County: Corcoran and Plymouth townships	24
Kandiyohi County: Atwater village	56
Koochiching County: Gemmell village, Evergreen township	19
Mahnomen County:	
Waubun village, Popple Grove township	101
Mahnomen village	103
McLeod County: Hutchinson township	104
Marshall County: Strandquist village, Lincoln township	42
Meeker County: Watkins village, Forest Prairie township	6
Nicollet County: St. Peter city	123
Otter Tail County: Parkers Prairie village, Effington township	112
Pennington County: Thief River Falls city	300
Polk County:	
Erskine village, Knute township	301
McIntosh village	308
Ramsey County: Rose township, (University Farm)	261
Sherburne County: Becker village	22
Sibley County:	
New Auburn village, New Auburn township	48
Stearns County: Main Prairie township	6
Traverse County: Parnell and Walls townships	85
Wadena County: Sebeka village	320
Wright County: Buffalo village, Frankfort township	47

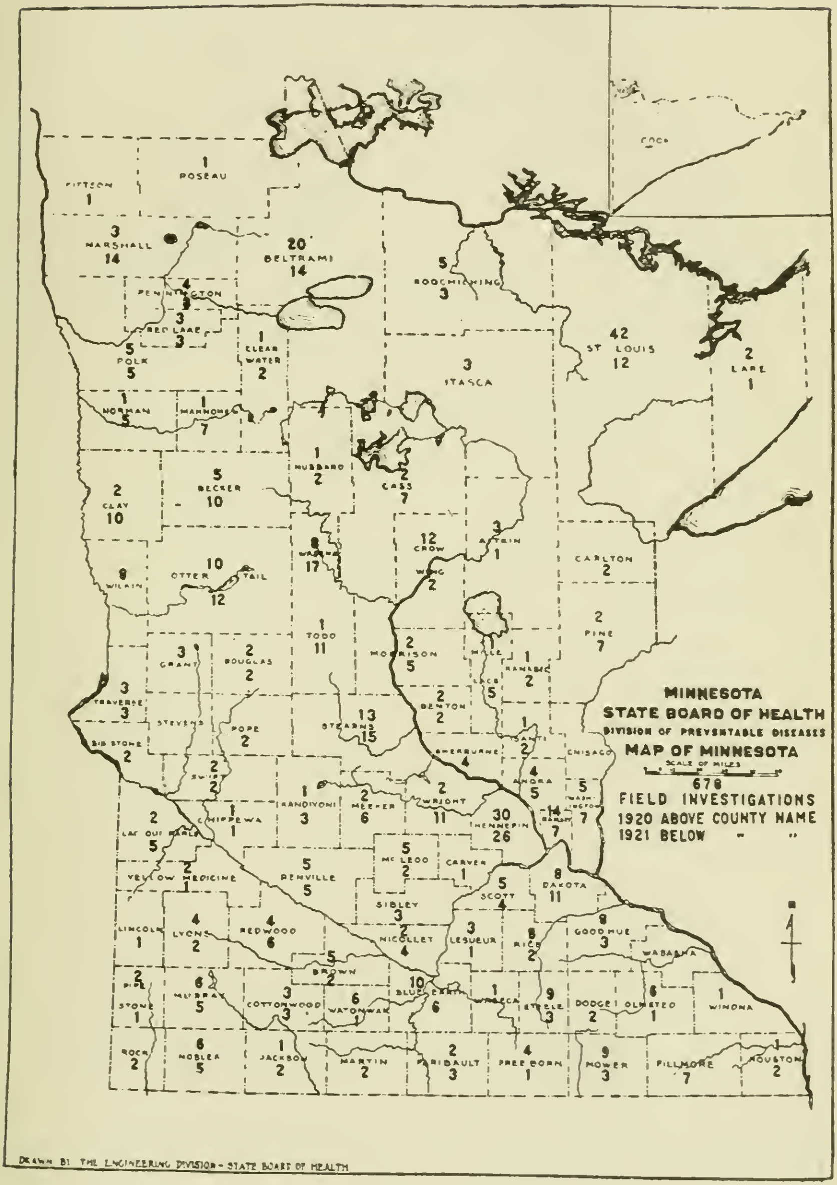
MISCELLANEOUS, 1920

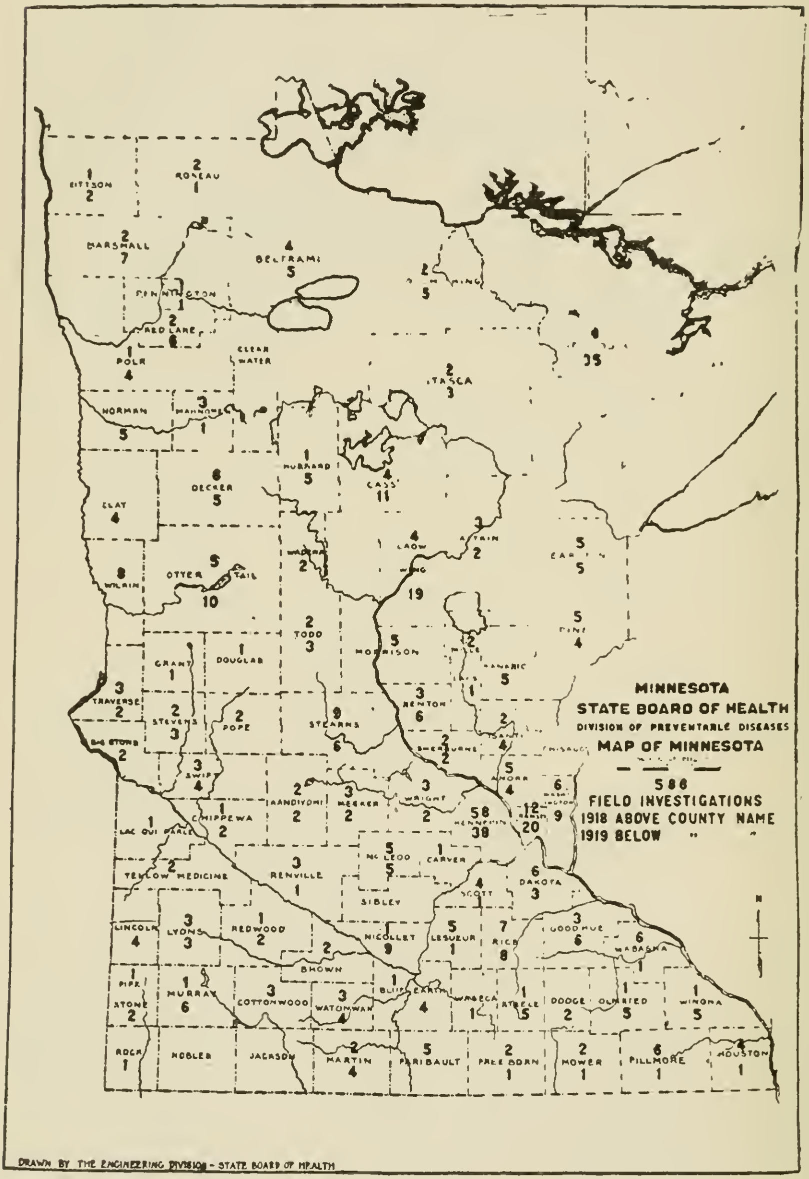
Becker County:	
Ogema village	185
White Earth village, White Earth township	186
Beltrami County:	
Bemidji city	52
Red Lake Ind. Agency	217
Red Lake Ind. Agency	286
Red Lake Ind. Agency	296
Red Lake Ind. Agency	300
Red Lake Ind. Agency	327
Blue Earth County: Mankato city	79
Cass County:	
Remer village	50
Federal Dam village	122
Clay County: Barnesville village	21
Crow Wing County:	
Brainerd city	31
Brainerd city	252
Crosby village	38
Dakota County: South St. Paul city	153
Freeborn County:	
Albert Lea city	15
Glenville village	43
Goodhue County: Belle Creek township	235
Grant County: Elbow Lake village	17
Hennepin County:	
Minneapolis city	13
Minneapolis city	135
Brooklyn Center township	248
Jackson County: Jackson village	309
Koochiching County: International Falls village	86
McLeod County:	
Hutchinson city	33
Glencoe city	34
Mahnomen County: Mahnomen village	53
Morrison County: Richardson township	328
Mower County: Austin city	159
Olmsted County: Rochester city	235
Pennington County: Sanders township	244
Ramsey County:	
Rose township, St. Paul city	13
St. Paul city	139
Redwood County:	
Charlestown township, Lamberton township	59
Morgan village	71
Rice County: Faribault city	A153
St. Louis County:	
Virginia city	81
Nichols township	195
Eveleth city, Virginia city, Hibbing village, Chisholm city	201
Scott County:	
Shakopee city	37
Shakopee city	249
Stearns County: Sauk Center city	127
Steele County:	
Owatonna city	68
Owatonna city	70
Swift County: Appleton village	329
Traverse County: Dumont village	171
Washington County: Stillwater city	120

MISCELLANEOUS, 1921

Beltrami County: Northern township	256
Big Stone County: Graceville village	97
Fillmore County: Mabel village	142
Hennepin County:	
Minnetonka township (Glen Lake San.)	21
Wayzata village	156
Minneapolis city	31
Minneapolis city	274
Independence township	163

Lac qui Parle County:
  Madison city ... 204
  Madison city ... 205
  Madison city ... 278
  Madison city ... 279
LeSueur County: Waterville city ... 78
Mahnomen County: Popple Grove township ... 103
Marshall County:
  Warren city ... 150
  Foldahl and Wright townships ... 241
Mille Lacs County:
  Milaca village ... 83
  South Haven township ... 151
Pope County:
  Gilchrist township ... 53
  Glenwood city, Gilchrist township ... 236
St. Louis County: Kitzville village, Duluth city, Great Scott township (Spina Loc.) ... 312
Steele County: Owatonna city ... 76
Swift County: Kerkhoven village ... 55
Washington County: South Stillwater village (State Prison) ... 37
Wright County: Otsego township ... 253


MINNESOTA
STATE BOARD OF HEALTH
DIVISION OF PREVENTABLE DISEASES
MAP OF MINNESOTA
SCALE OF MILES
678
FIELD INVESTIGATIONS
1920 ABOVE COUNTY NAME
1921 BELOW " "
KITTSON 1
1 ROSEAU
3 MARSHALL 14
20 BELTRAMI 14
5 KOOCHICHING 3
42 ST LOUIS 12
2 LAKE 1
COOK
4 PENNINGTON 3
3 RED LAKE 3
5 POLK 5
1 CLEAR WATER 2
3 ITASCA
1 NORMAN 5
1 MAHNOMEN 7
1 HUBBARD 2
2 CASS 7
2 CLAY 10
5 BECKER 10
12 CROW WING 2
3 AITKIN 1
CARLTON 2
8 WADENA 17
10 OTTER TAIL 12
8 WILKIN
2 PINE 7
1 TODD 11
2 MORRISON 5
1 MILLE LACS 5
1 KANABEC 2
3 GRANT
2 DOUGLAS 2
3 TRAVERSE 3
STEVENS
POPE 2
13 STEARNS 15
2 BENTON 2
BIG STONE 2
1 ISANTI 2
SHERBURNE 4
CHISAGO
2 SWIFT 2
4 ANOKA 5
5 WASHINGTON 7
1 KANDIYOHI 3
2 MEEKER 6
2 WRIGHT 11
30 HENNEPIN 26
14 RAMSEY 7
1 CHIPPEWA 1
2 LAC QUI PARLE 5
2 YELLOW MEDICINE 1
5 RENVILLE 5
5 MC LEOD 2
CARVER 1
5 SCOTT 4
8 DAKOTA 11
SIBLEY 3
LINCOLN 1
4 LYONS 2
4 REDWOOD 6
2 NICOLLET 4
3 LESUEUR 1
8 RICE 2
8 GOODHUE 3
WABASHA
5 BROWN 2
2 PIPE STONE 1
6 MURRAY 5
3 COTTONWOOD 3
6 WATONWAN 1
10 BLUE EARTH 6
1 WASECA
9 STEELE 3
DODGE 2
6 OLMSTED 1
1 WINONA
ROCK 2
6 NOBLES 5
1 JACKSON 2
MARTIN 2
2 FARIBAULT 3
4 FREEBORN 1
9 MOWER 3
FILLMORE 7
1 HOUSTON 2
DRAWN BY THE ENGINEERING DIVISION - STATE BOARD OF HEALTH


MINNESOTA
STATE BOARD OF HEALTH
DIVISION OF PREVENTABLE DISEASES
MAP OF MINNESOTA
586
FIELD INVESTIGATIONS
1918 ABOVE COUNTY NAME
1919 BELOW " "
KITTSON
ROSEAU
MARSHALL
BELTRAMI
PENNINGTON
RED LAKE
POLK
CLEAR WATER
ITASCA
NORMAN
MAHNOMEN
HUBBARD
CASS
BECKER
CLAY
CROW WING
AITKIN
CARLTON
WILKIN
OTTER TAIL
WADENA
TODD
MORRISON
MILLE LACS
KANABEC
PINE
GRANT
DOUGLAS
TRAVERSE
STEVENS
POPE
STEARNS
BENTON
ISANTI
CHISAGO
BIG STONE
SWIFT
SHERBURNE
ANOKA
WASHINGTON
KANDIYOHI
MEEKER
WRIGHT
HENNEPIN
RAMSEY
CHIPPEWA
LAC QUI PARLE
YELLOW MEDICINE
RENVILLE
McLEOD
CARVER
SIBLEY
SCOTT
DAKOTA
LINCOLN
LYONS
REDWOOD
NICOLLET
LESUEUR
RICE
GOODHUE
WABASHA
BROWN
PIPESTONE
MURRAY
COTTONWOOD
WATONWAN
BLUE EARTH
WASECA
STEELE
DODGE
OLMSTED
WINONA
ROCK
NOBLES
JACKSON
MARTIN
FARIBAULT
FREE BORN
MOWER
FILLMORE
HOUSTON
N
DRAWN BY THE ENGINEERING DIVISION - STATE BOARD OF HEALTH

Minnesota State Board of Health
Division of Sanitation

Report for Biennial Period

January 1, 1920, to December 31, 1921

By H. A. WHITTAKER, Director

MINNESOTA STATE BOARD OF HEALTH

DIVISION OF SANITATION

Biennial Report, January 1, 1920 to December 31, 1921

By H. A. Whittaker, Director

Minnesota has suffered its share of sickness and loss of life due to unsatisfactory water supplies and the improper disposal of sewage and other wastes, much of which could have been prevented by proper sanitary supervision and adequate protective measures. Many epidemics of typhoid fever, dysentery, and diarrhea have occurred in various parts of the state during past years, and a few still continue to occur, in which unsafe water supplies and improper disposal of sewage and other wastes have been involved. There have been outbreaks of water-borne typhoid fever at the following places during the period covered by this report: Baudette; Township 54, Section 12, Range 20, St. Louis County; Red Lake Falls Township, Red Lake County; Shakopee; and Puposky (Lake Julia Sanatorium). (See pages 79 to 80, report of the Division of Preventable Diseases.)

Milk supplies have played their part in the transmission of communicable diseases throughout the state. Unsanitary milk supplies are involved in the spread of tuberculosis, typhoid fever, dysentery, scarlet fever, diphtheria, and septic sore throat. Outbreaks of milk-borne typhoid fever occurred at the following places during 1920 and 1921: Eveleth; Orono Township, Hennepin County; Canby city, and Freeland Township, Lac qui Parle County; Mendota and Lakeville Townships, Dakota County; Donaldson; and Wadena.

An enumeration of the most important water-borne and milk-borne epidemics prior to 1920 was given in the last biennial report of this Division.

The improper disposal of sewage, trade waste, refuse and garbage may give rise to offensive odors thereby creating a nuisance in the community and often seriously interfering with public or individual comfort. The gross pollution of rivers and lakes with sewage and trade wastes is a practice which should be prevented since the damage to adjoining property especially in the farming districts is often great. It is the policy of the State Board of Health to keep the rivers and lakes in the state as clean as is practicable, and it should be the desire of every community to aid in this work of public decency even in the cases where the possibility of the transmission of disease is remote.

The increasing population in both the urban and rural communities constantly adds to the possibilities of infection from communicable diseases unless sanitary problems are given careful consideration. Information obtained from 107 cities and villages in the state indicates that there has been an increase of slightly more than 9 per cent in the total number of water service connections made during 1920 and 1921 or an equivalent of about 4½ per cent increase per year. Information obtained from 76 municipalities indicate an increase of nearly 11 per cent in the number of house connections with sewerage systems. These figures would indicate that the hazard is constantly increasing on unsafe public water supplies, and that the possibility of infecting larger numbers of people from any one polluted supply is steadily on the increase. It likewise means that the volume of domestic sewage being discharged into municipal systems is rapidly increasing and that more careful supervision of the means of final disposal of the sewage must be acomplished.

Minnesota with its many beautiful lakes and attractive rivers and streams is bringing more and more tourists into the state each year, and hotels and camps are being established in large numbers for their accommodation. These tourists come from various parts of the country, and some will bring with them communicable diseases. If the sanitation of camps and summer resorts where the visitors spend their time is not satisfactory, there is a possibility of these places becoming a factor in the transmission of disease. Only a few of these camps are provided with safe sanitary facilities at the present time and for this reason they constitute a serious menace to the communities in which they are located and to the tourists using them. It should be the duty of the state to see that tourists coming to Minnesota in good health do not contract disease from want of proper sanitary protection, and that the health of the people of the state is not endangered by the tourist traffic. The State Board of Health has no authority to regulate these camps and many of them are located outside of incorporated municipalities so that they fall under the jurisdiction of township authorities who are not equipped to undertake sanitary supervision of them. Many of these camps do not receive any care from those responsible for their establishment, and consequently they become very unsanitary, and in certain instances, have created a public nuisance in the community. These conditions might be greatly improved if authority were given to regulate such places and funds provided for their investigation so that the local authorities could be advised on the selection of proper camp sites, the water supply, sewage and excreta disposal, garbage and refuse disposal, and any other sanitary problems associated with them.

Summer camps, under the direction of various organizations, institutions, etc., are becoming more and more popular in the state. These places are established for recreational purposes, especially for young people, and they do much good to those who are able to spend time at them. Many of these camps do not have a permanent location so that the camp site and sanitary facilities must be changed each year.

Industrial camps, principally those of a temporary nature that are established and maintained during the time of a specific piece of construction work, have been a problem for many years. They are much in need of sanitary supervision, and outbreaks of typhoid fever and dysentery have been traced to them.

Picnic grounds are becoming more numerous, especially in the vicinity of the larger cities, and they too present sanitary problems of importance. Some of the picnic grounds are visited by several thousand people in a single day, and usually a large part of this number is concentrated on the grounds at the same time. A number of these places have been observed where polluted lake water was distributed for drinking purposes, and the method of disposal of sewage, garbage and other wastes was most unsatisfactory. The importance of health protection to the people visiting such places is easily appreciated.

Fairs have also presented a problem for serious consideration. Approximately one hundred county fairs, in addition to the State Fair, are held each year which brings together a large number of people especially from the rural districts. Communicable diseases have been spread as the result of improper sanitation at certain fairs in the state, and supervision should be provided for such places.

Duties of Division of Sanitation: The specific duties assigned to the Division are as follows:

1. The investigation of proposed and existing water supplies, sewerage systems and refuse and garbage disposal systems for public use.

These investigations include a visit to the locality so that a study can be made of the problem and samples collected for examination if this is found to be a necessary part of the investigation. Such field surveys provide definite information on existing conditions, and form a basis for specific recommendations for new systems or for the correction of defects in existing systems.

2. The supervision of certified milk, and the pasteurization of milk.

The routine supervision work on certified milk, and on the pasteurization of milk, it outlined on pages 141 to 143 of this report.

3. The examination of plans and specifications of new water supply, sewerage, garbage and refuse disposal systems, and milk pasteurization plants.

The plans and specifications submitted are usually prepared on the basis of the information obtained at the time of the preliminary field investigation of the proposed installation. Reports of all preliminary field investigations are sent to the engineers or others having charge of the preparation of the plans. If the plans are found to be satisfactory, they are approved and the installation made. After the installation is completed, a second field survey is undertaken to determine whether it has been made in accordance with the approved plans.

4. Assistance to cities, villages, and communities of the state in establishing local supervision of water supply, milk supply, sewerage, garbage and refuse disposal problems.

It is the policy of the State Board of Health to encourage municipalities and other local government units to handle their own problems as far as this is practicable. The details of the work on the problems mentioned include visits to the locality to study the local situation; recommendations for improving unsatisfactory conditions if such are found to exist; the drafting of ordinances and other regulatory measures for local application, and assistance in the passage of such measures. The local authorities are frequently assisted with lectures intended to create public interest in the sanitary improvements.

5. The preparation and dissemination of information to the public on sanitary subjects of interest to the people of the state.

Special sanitary problems are investigated and the information given to the public. A few examples of special problems which have been investigated are: The sanitation of swimming pools and bathing beaches; several subjects relating to the pasteurization of milk; methods for the sterilization of milk equipment; a method for the disposal of creamery waste, etc. A very important part of this work is the information given to farmers and others living in the rural districts on problems of rural sanitation especially water supplies, sewerage systems and privies for farm residences.

Water Supplies

Minnesota is fortunate in having an abundance of water. There are few sections of the state where water supplies cannot be obtained either from surface or underground sources, and practically all of these waters can be made safe for drinking purposes if the proper sanitary precautions are taken.

There are at present 386 municipalities in Minnesota that have public water supplies. Three hundred and fifty of these supplies are taken from underground sources, including wells and springs; 36 are obtained from lakes and streams, and two from mixed surface and underground sources. Nineteen of these surface supplies are treated before distribution for public consumption, and 18 are not treated. The records of the Division show that 134 municipal water supplies were investigated during the biennial period, and of this number 66 were found to be in an unsatisfactory condition at the time of the last investigation. The seriousness of these unsafe water supplies increases each year for the systems are constantly being extended to supply more people. One very dangerous condition associated with public water supplies in the state is the fact, as before mentioned, that 18 municipalities are being supplied with surface water which is not treated before being distributed for public consumption. Any one of these supplies may become contaminated at any time which might result in a very serious epidemic of typhoid fever, dysentery or diarrhea. At the end of this biennial period, December 31, 1921, the following municipalities were distributing surface water without treatment: Akeley, Detroit, Excelsior, Fairmont, Grand Rapids, Granite Falls, Howard Lake, Melrose, Milaca, Northome, Osakis, Park Rapids, Sauk Center, Thief River Falls, Walker, Warroad, Waverly and Winsted.

Any water supply which is distributed throughout a municipality will be used by many of the people regardless of the fact that they are warned against its use; this hazard is greater among the children than the adults because it is more difficult to make them understand the danger of using water which is not safe. Unsafe water supplies are also a great danger to transients passing through the cities and villages maintaining the unsafe supplies since these people have no knowledge of the fact that the supplies are unsafe and are more likely to use them than the local residents. This condition is becoming more important on account of the large tourist population which passes through Minnesota each year. Therefore, since any water supply that is distributed to taps that are available will be used, the only positive way to protect the entire population is to make the supply safe.

It is gratifying to know that some places have, during the past two years, installed new water supplies, or made their existing supplies safe. Brainerd, which formerly obtained its water supply from the Mississippi River, has recently constructed wells from which a supply of pure water is now obtained for the city, and the use of water from the River abandoned. Grand Rapids and Sauk Center are constructing wells from which a safe supply will be obtained in the near future. Sauk Center has heretofore been supplied with water from the Sauk River, and Grand Rapids from Hale Lake, both of which were unsafe sources without treatment. St. Paul is constructing a new filtration plant which will treat all water supplied to the city. Other cities which have given consideration to improving their water supplies are: Fairmont, Little Falls, Melrose, St. Cloud, Excelsior, Baudette, and Park Rapids. It is hoped that improvements will be carried out in the near future at these places. A number of municipalities that obtain their water supplies from underground sources have carried out the changes recommended by this Division in their wells, reservoirs, or distribution systems.

It seldom costs more to install a safe water supply than an unsafe one, provided consideration is given to this point at the time the supply is installed. It is for this reason that the State Board of Health requires plans and specifications of all new water supplies, or changes in existing supplies, to be submitted for approval before contracts are entered into for the construction work. This procedure makes it possible to eliminate errors in the location and construction of the supply before it is installed. The most difficult task associated with the sanitary supervision of public water supplies is to secure correction in supplies which were installed before the State Board of Health had authority to require the submission of plans and specifications on new installations. Many installations made prior to that time are so located and constructed that they are exceedingly dangerous sources from which to obtain water for drinking purposes, but there is frequently considerable hesitation on the part of the owners, or those responsible for the supply, to expend money in correcting them even when the public health is endangered.

It may be of interest to those reading this report to know what some of the unsatisfacory conditions are in the location, construction and operation of water supplies which make them unsafe. The following is an outline of some specific factors which are responsible for pollution or which affect analytical results on water supplies:

A. Source of Supply

1. Surface and Underground supplies.
    (a) The selection of water supplies without complete hydrographic and sanitary data.

(b) The location of water works, including pumping station, treatment plants, reservoirs, etc., where they are subject to flooding with surface water from lakes, streams and other sources, or where satisfactory drainage cannot be established away from the plant on the ground surface.

2. Underground Supplies.

(a) The presence of sewers, cesspools, wells used for the disposal of sewage and surface drainage, etc., in close proximity to the source.

(b) Excavation work in the immediate vicinity, especially where explosives are used which would result in disturbance of the underground formations.

(c) Defective casings resulting from incorrect design or construction, and the deterioration of materials. The tops of drilled well casings are frequently fractured during the process of removing the drop-pipe and cylinder for repairs.

(d) The lack of covers to wells and springs, or the improper design and construction of covers, especially of dug wells and springs, and of the caps for casings of drilled and driven wells.

(e) The location of pumps and pumping equipment in a pit immediately over or adjacent to the well or spring casing where such design and construction could be avoided. Such pits act as catch-basins for drip water from the pump and piping, and sometimes for surface water which may enter the pit through defective side walls or covers where pumps of the deep well type are used. Unless provision is made for proper removal of this water, it may accumulate to a sufficient extent to flood the casing head or the pumping equipment, thus endangering the supply.

(f) The construction of drains leading from a well or pump pit to a sewerage or drainage system. Such drains establish a direct connection between the water supply and a source of pollution.

(g) Inadequate protection of air vents from wells using air lift pumps.

B. Treatment

1. Surface and Underground Supplies.

(a) The design and construction of water treatment plants, including filtration plants, chlorine plants, and water softening plants, without adequate knowledge of the microscopic, bacteriological, physical, or chemical condition of the water to be treated, or sufficient preliminary experimental data to demonstrate the proper type of plant to install.

(b) The installation of only a part of the treatment necessary to purify the water properly. This is especially true where chlorine treatment has been recommended when filtration should have been a part of the treatmentt in order to insure satisfactory results.

(c) The improper design or construction of settling basins, coagulation basins, filters, piping and apparatus for administering chemicals.

(d) The existence of by-passes around all or a part of the water treatment plant by which untreated, or partially treated water can be discharged into the distribution system.

(e) A lack of duplicate parts of machinery and apparatus involved in the treatment of the water, and necessary to keep the plant in operaion in case of accidental breakdown. This applies especially to chlorine apparatus.

(f) The intermittent discharge of sewage and trade wastes into the source of supply, placing an unusual burden on the treatment plant at irregular intervals.

(g) Defects in the design and construction of water softening plants that expose the water under treatment to possible pollution, especially through the application of the chemicals.

C. Pumping Equipment

1. Surface and Underground Supplies.

(a) The use of a type of pump of unsatisfactory construction, as for example, one which would require a well pit around the well at the surface when another type of pump would have obviated the necessity of such construction, or the use of one which requires priming when put in operation, or which requires the attendant to enter the well for the purpose of oiling.

(b) The return of water used for cooling engines or pump bearings into the supply.

(c) The improper location of intakes to air compressors which would result in pumping dust-laden air into a well operating on the air-lift principle.

D. Storage

1. Surface and Underground Supplies.

(a) Covers not provided so as to permit the entrance of unauthorized persons, animals, birds, insects, dust, etc.

(b) The use of covers of surface or underground reservoirs for pleasure purposes such as playgrounds, tennis courts, skating rinks, etc.

(c) Faulty construction of walls and roof.

(d) Manholes in the roofs constructed without collars which would permit the entrance of surface water, and the use of covers without overlapping edges.

(e) The use of vents in the roof which are improperly constructed so as to permit the entrance of small animals, birds, insects, etc.

(f) The improper design of drain pipes and overflow pipes which would allow the backing up of sewage or other polluted material from a sewerage or drainage system to which the drain or overflow is connected.

(g) The passing of water pipes carrying polluted water through a storage reservoir, or a clear water basin of a filtration plant, thus creating a possible opportunity for polluting the supply in case of leakage.

E. Distribution

1. Surface and Underground Supplies.

(a) The existence of cross connections between the distribution system and another water supply which is unsafe.

(b) Connections with mechanical equipment receiving and returning water to the system.

(c) Plumbing fixtures which allow water to return to the system from polluted sources during periods when there is a negative pressure in the system.

(d) Connections between the distribution system and the bottoms of elevated water tanks where such tanks are subject to pollution.

(e) The practice of connecting fire engines with the distribution system and pumping water from polluted sources into the system for fire-fighting purposes.

(f) The laying of water mains in the same trench with sewers, the water mains being laid at a lower elevation than the sewer pipe. This adds unnecessary danger in case breaks occur in the water system and it is necessary to drain the pipes for repair. If leakage occurs in the sewer pipe or it is accidentally broken during excavation, there is opportunity of sewage entering the water mains.

F. Operation

1. Surface and Underground Supplies.

(a) The operation of water works by inexperienced operators with little or no knowledge or appreciation of sanitation.

(b) Careless operators who do not observe difficulties, and who do not repair breaks in equipment including well casing, suction pipes, pumps, chemical feed apparatus, chlorine apparatus, etc.

(c) The operation of water supplies without analytical control. This applies especially to water treatment plants.

(d) Neglect to disinfect any part of the system handling pure water after repair work on well, pumps, piping, filters, clear water basins, reservoirs, tanks and distribution system, etc.

The following tables, which show the names of localities for which investigations were undertaken during the biennium and the number made for each locality, indicate that 475 field investigations were made for the 272 localities listed. Seventy-six sets of plans were examined on water supplies for 69 localities. Laboratory examinations on water supplies totaled 2,820. Fifteen lectures were given on the supervision of water supplies as carried on by this Division.

TABLE NO. 1

LIST OF FIELD INVESTIGATIONS ON WATER SUPPLIES SHOWING NUMBER UNDERTAKEN IN EACH LOCALITY

County.	Place.	Number.
Aitkin:		
	Aitkin	2
	Swatara	1
Anoka:		
	Centerville	1
	Coon Rapids	1
	St. Francis	1
Becker:		
	Detroit	5
	Frazee	1
	Lake Park	1
Beltrami:		
	Baudette	1
	Bemidji	3
	Nebish	1
	North Bemidji	1
	Puposky	1
	Redby	1
	Spooner	1
Big Stone:		
	Big Stone	1
	Correll	1
	Ortonville	3
Blue Earth:		
	Garden City	1
	Lake Crystal	1
	Mankato	1
	Rapidan	1
Brown:		
	New Ulm	2
	Sleepy Eye	3
	Springfield	2
Carlton:		
	Automba	1
	Carlton	2
	Cloquet	4
	Mahtowa	1
	Moose Lake	1
	Thomson	1
	Wrenshall	1
Carver:		
	Chaska	1
	Mayer	1
	Victoria	1
Cass:		
	Cass Lake	2
	Hackensack	1
	State Sanatorium	1
Chippewa:		
	Montevideo	3
Chisago:		
	Chisago City	2
	Harris	1
	Rush City	1
	Shafer	1
Clay:		
	Averill	1
	Barnesville	2
	Dilworth	2
	Moorhead	1
Cook:		
	Lutsen	1
Cottonwood:		
	Bingham Lake	2
	Mountain Lake	2
	Storden	1
	Windom	1
Crow Wing:		
	Brainerd	1
	Ironton	1
	Riverton	2
Dakota:		
	Castle Rock	1
	Hastings	1
	Inver Grove	1
Dodge:		
	Dodge Center	1
	Hayfield	1
	Mantorville	1
Douglas:		
	Alexandria	1
	Brandon	1
Faribault:		
	Bricelyn	2
	Elmore	2
	Wells	3
Fillmore:		
	Newburg	1
Freeborn:		
	Albert Lea	5
Goodhue:		
	Cannon Falls	2
	Kenyon	1
	Pine Island	1
	Red Wing	1
	Wanamingo	1
	Zumbrota	2

TABLE NO. 1—Continued

County. Place.	Number.
Grant:	
Herman	1
Hennepin:	
Bloomington township	1
Eden Prairie	1
Edgewood	1
Glen Lake	3
Golden Valley	1
Hopkins	6
Lake Minnetonka	3
Linwood	1
Minneapolis	11
Minnetonka Beach	1
Minnetonka Mills	2
Richfield	3
Robbinsdale	2
St. Bonifacius	1
Wayzata	2
Houston:	
Caledonia	1
La Crescent	1
Reno	2
Spring Grove	1
Hubbard:	
Akeley	1
Dorset	2
Farris	1
Nary	1
Isanti:	
Braham	1
Itasca:	
Alder	1
Ball Club	1
Bovey	2
Calumet	3
Coleraine	2
Deer River	1
Keewatin	5
Marble	1
Pengilly	1
Taconite Junction	2
Jackson:	
Heron Lake	1
Jackson	2
Wilder	1
Kanabec:	
Mora	1
Kandiyohi:	
Atwater	1
Willmar	2
Kittson:	
Bronson	1
St. Vincent	1
Koochiching:	
Alvina	2
Margie	1
Lac qui Parle:	
Bellingham	3
Hamlin	2
Louisburg	1
Lake:	
Knife River	2
Section Thirty	1
Two Harbors	2
Le Sueur:	
Kasota	2
Le Sueur	2
New Prague	2
Waterville	1
Lincoln:	
Arco	1
Tyler	1
Verdi	1
Lyon:	
Marshall	4
Tracy	3
McLeod:	
Biscay	1
Silver Lake	1
Mahnomen:	
Waubun	1
Marshall:	
Argyle	1
Oslo	1
Stephen	1
Warren	2
Martin:	
Fairmont	3
Fox Lake	1
Sherburne	1
Meeker:	
Litchfield	1
Morrison:	
Hillman	1
Little Falls	1
Upsala	1
Mower:	
Austin	3
Murray:	
Chandler	1
Slayton	1
Nobles:	
Bigelow	1
Ellsworth	2
Rushmore	2
Worthington	1
Norman:	
Ada	1
Borup	1
Twin Valley	1
Olmsted:	
Eyota	2
Rochester	2
Salem Corners	1
Ottertail:	
Deer Creek	2
Fergus Falls	3
Henning	1
Underwood	1
Pennington:	
Thief River Falls	2
Pine:	
Duquette	1
Hinckley	1
Pine City	1
Pokegama	2
Sandstone	2
Willow River	2
Pipestone:	
Ihlen	2
Jasper	1
Polk:	
Crookston	7
Dugdale	1
East Grand Forks	3
Fosston	1
Mentor	3
Pope:	
Farwell	1
Glenwood	2
Ramsey:	
Daytons Bluff	2
North St. Paul	2
St. Paul	16
White Bear	4
Red Lake:	
Red Lake Falls	1

TABLE NO. 1—Continued

County. Place.	Number.
Redwood:	
Lamberton	2
Sanborn	1
Wabasso	1
Renville:	
Morton	1
Olivia	2
Renville	2
Sacred Heart	2
Rice:	
Faribault	4
Northfield	1
Rock:	
Beaver Creek	1
Hills	1
Luverne	4
Roseau:	
Greenbush	1
Scott:	
Jordan	4
Merriam	1
Shakopee	1
Sherburne:	
Elk River	1
Sibley:	
Arlington	3
Winthrop	3
St. Louis:	
Angora	1
Aurora	2
Babbitt	3
Biwabik	3
Buhl	2
Chisholm	2
Duluth	5
Duluth Heights	1
Elba	1
Ely	1
Eveleth	9
Fond du Lac	2
French River	1
Gilbert	4
Hibbing	9
Iron Junction	1
Mckinley	1
Meadowlands	1
Mitchell	2
Mountain Iron	1
New Duluth	1
Proctor	1
Sharon	2
Soudan	1
Stevenson Location	1
Tower	1
Virginia	6
Stearns:	
Brooten	1
Holdingford	1
Melrose	3
St. Cloud	5
Sauk Center	1
Waite Park	1
Steele:	
Owatonna	1
Stevens:	
Hancock	1
Morris	2
Swift:	
Danvers	1
Holloway	1
Todd:	
Bertha	2
Grey Eagle	1
Hewitt	1
Long Prairie	1
Staples	3
Wabasha:	
Elgin	1
Lake City	1
Wabasha	3
Wadena:	
Menahga	1
Wadena	1
Waseca:	
Janesville	1
Washington:	
Forest Lake	2
Lake Elmo	1
Newport	1
South Stillwater	1
Wildwood	1
Watonwan:	
Madelia	1
St. James	4
Wilkin:	
Breckenridge	1
Winona:	
Fremont	1
Lewiston	1
St. Charles	1
Winona	2
Wright:	
Annandale	1
Buffalo	2
Delano	1
Monticello	1
South Haven	1
Yellow Medicine:	
Granite Falls	2
Total	475

TABLE NO. 2

LIST OF PLAN EXAMINATIONS ON WATER SUPPLIES SHOWING NUMBER UNDERTAKEN FOR EACH LOCALITY

County.	Place.	Number.
Aitkin:	Swatara	1
Anoka:	Centerville	1
Beltrami:	Bemidji	2
	Nebish	1
	Puposky	1
	Spooner	1
Blue Earth:	Pemberton	1
Carlton:	Automba	1
	Cloquet	2
	Kettle River	1
	Moose Lake	1
Chisago:	Rush City	1
	Shafer	1
Clay:	Moorhead	2
Cook:	Lutsen	1
Crow Wing:	Trommald	1
Dakota:	Farmington	1
	South St. Paul	2
Douglas:	Brandon	1
Faribault:	Bricelyn	1
	Delavan	1
Fillmore:	Mabel	1
Goodhue:	Pine Island	1
	Red Wing	1
	Wanamingo	1
Hennepin:	Hopkins	1
	Richfield	1
	Robbinsdale	1
	Wayzata	1
Itasca:	Ball Club	1
	Keewatin	1
	Marble	1
Jackson:	Wilder	1
Kandiyohi:	Atwater	1
	Willmar	1
Kittson:	Bronson	1
Martin:	Ceylon	1
	Fairmont	1
	Sherburne	1
Morrison:	Hillman	1
Nobles:	Bigelow	1
Pennington:	Thief River Falls	2
Pine:	Duquette	1
	Willow River	1
Pipestone:	Pipestone	1
Polk:	Dugdale	1
	Mentor	1
Pope:	Starbuck	1
Ramsey:	New Brighton	1
	St. Paul	1
Renville:	Hector	1
Sibley:	Arlington	1
St. Louis:	Babbitt	1
	Ely	2
	Eveleth	1
	Franklin	1
	Gilbert	1
	Kitzville	1
	Tower	1
Stevens:	Chokio	1
Todd:	Grey Eagle	1
Waseca:	Janesville	1
Washington:	Forest Lake	2
	Lake Elmo	1
Watonwan:	Butterfield	1
Wilkin:	Breckenridge	2
Wright:	Annandale	1
	Buffalo	1
	Cokato	1
Total		76

MILK SUPPLIES

Milk is an essential article of diet and is used more extensively than almost any other food. It is estimated that the amount consumed daily in the United States averages one glass per person, and that one-sixth of this amount is used as a food for infants and young children. All children from the time they are weaned should receive cow's milk as an important part of their diet since milk contains the constituents which are necessary for their proper growth and development. In addition to being an inexpensive food, milk is also an important source of vitamines. One quart of milk is equal in value to any of the following food items: I pound of steak, 11 eggs, 3¾ pounds of fresh codfish, 2½ pounds chicken, 1 quart oysters, or 1 pound loin of pork.

Safe milk is unquestionably one of the most difficult foods to produce due to the various stages through which it passes from the time it leaves the cow until it reaches the consumer. Milk is practically the only animal food that is used without being cooked. It has been said that milk has caused more sickness than all other foods combined.

The most important diseases associated with milk are tuberculosis, typhoid fever, scarlet fever, diptheria, and septic sore throat. Unsafe or improperly prepared milk is responsible for a large percentage of the thousands of deaths from intestinal diseases which occur annually in the United States among children under two years of age. Health authoriities now recognize that milk is responsible for at least one-third of the tuberculosis in children under sixteen years of age. The reason for this can readily be appreciated when it is known that from 4 to 40 per cent (depending upon the section of the country), of the dairy cows in the United States are affected with tuberculosis. There are over 100,000 tuberculous cattle in Minnesota at the present time. Estimates made recently by the State Live Stock Sanitary Board show that in two counties in the state more than 10 per cent of the cattle are tuberculous, in eight counties from 7.6 to 10 per cent are affected, and in 19 counties from 5.1 to 7.5 per cent are diseased.

The control of milk supplies in Minnesota is largely a problem of municipal concern for the reason that the state laws do not provide for detailed supervision. Every municipality, regardless of its size, must pass and enforce a suitable milk ordinance before it can be assured of a safe raw or a safe pasteurized milk supply. Proper supervision eliminates the dangers from milk and makes it a safe food. The responsibility rests with the people in a community to give this matter the attention it deserves by demanding the enforcement of a suitable milk ordinance. It is the duty of every municipality to provide a safe milk supply.

The United States government has recently started a nation-wide campaign in child hygiene, and the supervision of milk supplies is strongly urged for the protection of children against the diseases commonly transmitted through milk.

In 1917, the Division of Sanitation investigated the status of the local supervision of milk supplies in Minnesota, and it was found that with the exception of cities in Class I (Minneapolis, St. Paul and Duluth), only four cities were effectively enforcing milk ordinances. In order to provide the municipalities of the state with a milk ordinance that would be practical and enforceable, the various state departments interested in the improvement of market milk co-operated in the drafting of a milk ordinance adaptable to municipalities not in Class 1. This ordinance provides for two classes of milk, namely, raw and pasteurized, and outlines the requirements which each class must meet. It is recognized that an ordinance could not be prepared which would contain all the requirements necessary to meet the local conditions in each municipality, but this ordinance can easily be adapted to the class of cities for which it was drafted after a field investigation is made and a study made of local conditions.

Following the drafting of the ordinance, the State Board of Health undertook an active campaign to secure the passage of ordinances in as many municipalities throughout the state as was possible. Lectures were given at public meetings at the request of local authorities and organizations, and literature was prepared for distribution on milk and its relation to public health. The lectures emphasized the importance of establishing local supervision of milk supplies as a means of safeguarding the health of the community. As a result of this work, milk ordinances have been adopted in the following cities in the state up to the end of this biennium: Aurora, Austin, Aitkin, Atwater, Bemidji, Blue Earth, Brainerd, Chisholm, Caledonia, Crookston, Dassel, Detroit, Ely, Fergus Falls, Faribault, Fairmont, Gilbert, Glenwood, Hutchinson, Litchfield, Lake City, New Prague, New Ulm, Owatonna, Ortonville, Pipestone, Rushford, Rochester, Red Wing, Sleepy Eye, St. Cloud, Virgina, Windom, Worthington, Winona. Following the passage of milk ordinances, representatives have been sent at the request of local authorities to many of these places to assist in establishing the details of local supervision. This service covers detail instructions to the local milk inspector in the methods of dairy inspection, and the methods of making laboratory examinations of the milk.

This supervision work has brought about a marked improvement in the milk supplies of the municipalities that have passed and are enforcing milk ordinances. The following examples are cited as being illustrative of the improvements which have been accomplished in certain municipalities. In one city with a population of approximately 10,000, the first tuberculin test made after the adoption of the ordinance revealed the fact that 12 per cent of the cows kept within the city limits were affected with tuberculosis. In another city with a population of approximately 2,000, a dairy herd which for the past seven years had furnished 40 per cent of the milk supply was tuberculin tested as required by the ordinance with the result that every animal was condemned on account of having tuberculosis.

The Pasteurization of Milk: The pasteurization of milk was introduced into this country about 1895, and its development has been exceedingly rapid up to the present time. Health authorities now agree that all milk should be pasteurized unless it is produced and handled under conditions similar to those required for "certified" milk. Pasteurization is not intended as a substitute for lax or unclean methods of production; its purpose is primarily to overcome certain dangers in milk which even the most highly milk does not make it sterile but does destroy the disease-producing bacteria which may have been introduced during milking or subsequent handling.

The following regulations defining pasteurization and providing certain requirements for pasteurized milk have been passed by the State Board of Health:

> "Pasteurized milk is hereby defined to be normal cows' milk which has been subjected to a temperature of not lower than 145 degrees Fahrenheit for not less than 30 minutes and promptly cooled to a temperature of 50 degrees Fahrenheit, or lower, and thereafter stored at or below that temperature. No milk shall be labeled or sold as pasteurized milk unless it has been treated in the manner above defined. No plant shall be installed for the pasteurization of milk to be sold for human consumption nor shall any existing plant be (materially) altered or changed until complete plans and specifications for the installation, alteration or extension, together with such information as the State Board of Health may require, have been submitted in duplicate and approved by the Board so far as relates to its sanitary features, nor shall any pasteurization plant be operated or maintained unless the building and equipment of such plant is adequate to accomplish the process of pasteurization, cleaning and sterilization of milk handling apparatus and utensils and subsequent handling of the milk are conducted in a sanitary manner."
>
> "All persons at certified dairies, or pasteurization plants, engaged in the production, pasteurizaton, bottling or cleaning of milk apparatus or utensils, shall submit to a medical examination prescribed by the State Board of Health, to determine that they are not chronic carriers of infection transmissible through milk, or milk products."

The advantages of pasteurized milk and the value of the process from a health point of view depend in a large degree on the methods of supervision and control; the process cannot be left to the individual milk dealer to carry out as he sees fit. In order to assist pasteurization plant owners in carrying out the requirements of the State Board of Health, certain rules for heating, holding, cooling, and subsequent handling, have been prepared which must be strictly followed if the milk is to be effectively pasteurized.

Under the present system of supervision carried on by this Division, investigations are made at existing pasteurization plants to determine whether their equipment and method of pasteurizing complies with the requirements of the regulations of the State Board of Health. In addition to the field of survey, samples of milk are collected during various stages of the process for bacteriological examination. Following the investigation, a report is sent to the owner of the plant and to local officials. A follow-up investigation is made in all cases where recommendations have been made for the correction of defects in construction or operation of the plant. The detail supervision and control of the plant is then placed in the hands of the local authorities. It remains with the local dairy inspector, in most instances, to determine whether the daily routine method of pasteurzation is carried out in a satisfactory manner.

The regulations above quoted require that plans and specifications of new pasteurization plants, or changes in existing plants, shall be submitted to the State Board of Health for approval. Specific requirements for the submission of plans and specifications have been prepared for the information of plant owners in order to eliminate the construction of buildings that are not suitable for housing pasteurization apparatus or the installation of unsatisfactory equipment. These requirements are as follows:

1. Buildings: The building in which the plant is located should be properly lighted and ventilated. Separate rooms for pasteurization of milk and washing utensils should be provided. All floors should be constructed of impervious material and should be sloped to drains and gutters of adequate size. Suitable toilet facilities should be available for use of employes. Hand washing facilities with soap and clean towels should be provided.

2. Heaters and Holders: The apparatus should insure the heating and holding of the entire quantity of milk at a temperature of not lower than 145 degrees Fahrenheit for not less than 30 minutes. The equipment should be as simple as possible in order to insure proper operation, and so that it can be easily cleaned and sterilized.

3. Thermometers: A recording thermometer shall be provided to show the temperature to which all milk is heated and the length of time held.

4. Coolers and Storage: Facilities should be provided for promptly cooling the milk to 50 degrees Fahrenheit or below. Open surface coolers should have a tightly-fitting metal cover. The refrigerator should insure the storage of the milk at a temperature below 50 degrees Fahrenheit.

5. Bottle Filler and Capper: A machine filler of an approved type should be provided. Caps should be placed on the bottles with a machine capper of the hand or automatic type.

6. Pipes, Pumps, Fittings, Valves, Covers: The pumping of milk after it is pasteurized should be eliminated as far as possible. Pumps should be of an approved sanitary type, and so constructed that they can be readily taken apart for cleaning. All pipes, fittings and valves should be of the sanitary type, and should be so constructed that every part can be opened. The use of blind or closed elbow joints is prohibited. The arrangement of the plant and the location of the equipment should be such that the amount of piping is reduced to a minimum. By-passes and cross-connections by means of which milk may be passed through the plant without proper pasteurization will not be approved. The arrangement of the equipment should be such that the pasteurized milk is not passed through pipes, pumps or other apparatus which earlier in the run are used for unpasteurized milk. All apparatus in which milk is stored or pasteurized should have suitable tightly fitting covers to prevent exposure.

7. Bottles and Cans: Facilities should be provided to insure effective sterilization of bottles and cans.

Routine investigations are made on pasteurization plants at irregular intervals following the original approval of the plant and its methods of operation. Reports including recommendations for the correction of unsatisfactory conditions are made to the local authorites immediately following each investigation.

Excellent co-operation has been received from pasteurization plant owners and local health departments in this supervision work. There are 30 plants* in the state selling pasteurized milk whose equipment and methods of operation have been approved by this Board. In the cities where these plants are located, the pasteurized milk constitutes from 50 to 90 per cent of the entire supply.

Certified Milk: Physicians in the larger cities of the state have demanded a special class of milk to be used for clinical purposes, especially in the feeding of infants and invalids. Such a class of milk is provided in practically all large cities throughout the United States, and is known as "certified" milk. The requirements for this class of milk are exceelingly rigid, and the supervision work must be carried out under responsible health authorites.

At the request of physicians, the State Board of Health passed the following regulation governing the production and subsequent handling of certified milk:

> "All milk sold in Minnesota as certified milk must be free from pus and injurious bacteria and must not contain more than 10,000 bacteria of any kind to the cubic centimeter at the time of delivery to consumers. Such milk must have a specific gravity ranging from 1.029 to 1.034 and must be neutral, or at most, but faintly acid in reaction, must contain not less than 3.5 butterfat, and from 4 to 5 per cent sugar. It must be free from all contaminating foreign matter or chemical substances added for preservative or coloring purposes. Immediately after milking, the milk must be cooled and thereafter kept at a temperature below 50 degrees Fahrenheit until delivered to consumers.
>
> "The equipment of the dairy shall be adequate, and the methods of production and subsequent handling of the milk and the cleaning and sterilization of milk handling apparatus and utensils shall be conducted and maintained in a sanitary manner.
>
> "The dairy herds supplying certified milk must be under rigid veterinary supervision approved by the Minnesota State Board of Health. Such milk must be taken only from cows that have been shown by clinical examination and tuberculin test to be free from tuberculosis. The cows must also be free from all other diseases.
>
> "No milk shall be labeled, or sold as certified milk until application has been made and the State Board of Health has determined whether the equipment, methods of production and subsequent handling of the milk conform with the standards prescribed for certified milk.
>
> "The word 'certified' shall not appear in the name, title, or trademark of any firm, co-partnership, association, or corporation selling milk, nor on the label of any bottle containing milk unless the firm, co-partnership, association, or corporation producing and bottling such milk, has complied in all respects with the regulations of the State Board of Health governing the production and sale of certified milk.
>
> "All persons at certified dairies, or pasteurization plants, engaged in the production, pasteurization, bottling or cleaning of milk apparatus or utensils, shall submit to a medical examination to determine that they are not chronic carriers of infections transmissible through milk, or milk products."

The supervision of certified milk by the State Board of Health consists of field investigations and laboratory examinations to determine whether the regulations and rules of the Board governing the methods of production and subsequent handling of the milk, the medical examination of employes at the dairies, the physical condition and tuberculin testing of the animals in the dairy herds, and the bacteriological and chemical standards are being complied with. Routine investigations on the methods of production and subsequent handling of the milk, and the laboratory examinations of the milk are made by the Division of Sanitation. The routine medical examinations of the employes and the control of communicable diseases at the dairies are undertaken by the Division of Preventable Diseases (see page 141 report of Division of Preventable Diseases.)

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*Does not include cities in Class 1.

Weekly reports of the analytical results on examinations of samples of milk are distributed for the information of physicians and others interested in certified milk.

The following table, which shows the names of localities for which investigations were undertaken during the biennium and the number made for each locality, indicate that 131 field investigations were made for the 33 localities listed. Laboratory examinations of milk samples totaled 6,507. Twelve lectures were given on the subject of milk supplies in relation to public health, and on the supervision work carried on by this Division.

TABLE NO. 3

LIST OF FIELD INVESTIGATIONS ON MILK SUPPLIES SHOWING NUMBER UNDERTAKEN IN EACH LOCALITY

County.	Place.	Number.
Anoka:	Anoka	1
Becker:	Detroit	1
Beltrami:	Bemidji	2
Blue Earth:	Mankato	2
Brown:	New Ulm	1
Cass:	Cass Lake	1
Clay:	Moorhead	5
Cottonwood:	Windom	1
Freeborn:	Albert Lea	6
Goodhue:	Red Wing	5
Hennepin:	Hopkins	3
	Robbinsdale*	12
Lake:	Two Harbors	1
Martin:	Fairmont	2
Morrison:	Little Falls	1
Mower:	Austin	9
Nicollet:	St. Peter	1
Olmsted:	Rochester	10
Otter Tail:	Fergus Falls	1
Pennington:	Thief River Falls	2
Ramsey:	St. Paul*	15
Rice:	Faribault	4
St. Louis:	Duluth	6
	Hibbing	2
	Virginia	1
Scott:	Jordan*	8
Stearns:	St. Cloud	4
Steele:	Owatonna	3
Wadena:	Wadena	1
Waseca:	Waseca	1
Washington:	Stillwater	2
Winona:	Winona	5
	Downing, Wisconsin**	12
	Total	131

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*Certified milk.

†Certified milk sold in Minneapolis and St. Paul.

SEWERAGE SYSTEMS

The water carriage sewerage system is today recognized as being a fundamental necessity in the American standard of living. This is true on the farm as well as in the city. The installation of comfortable toilet facilities within the home is a distinct aid in maintaining regular habits of much benefit to the health and comfort of the individual. For this, and other obvious reasons, the State Board of Health is much interested in the installation of sewerage systems in all cities and villages in order that people may have toilet facilities in their homes. In order to be of assistance to farmers and others living outside of incorporated municipalities in providing toilet facilities in their homes, the State Board of Health has prepared a bulletin entitled "Water Supplies and Sewerage Systems for Farm Residences" which describes a simple treatment plant. Several thousand of these bulletins have been distributed. Usually the sewage dipsosal problem on the farm can be very easily handled by simple tank treatment. The municipal sewage disposal problem is not as simple, due to the much greater volume of sewage and in a great many cases, to the presence of industrial wastes in the sewage. These industrial wastes, in certain localities, have a much greater effect in creating nuisances than does ordinary domestic sewage.

Minnesota is very fortunate in having many lakes, rivers, creeks and ditches, which aid greatly in the satisfactory disposal of sewage. In only a few instances does the disposal of sewage and trade wastes affect the water supply of cities which use surface waters. The village of Baudette located below International Falls on the Rainy River is entirely dependent upon the Rainy River for its source of water supply. The sewage and paper mill waste, particularly the latter, which are discharged into the river at International Falls, Minnesota, and Fort Francis, Ontario, have a marked effect upon the water at Baudette, Minnesota, and Rainy River, Ontario. Since the Rainy River is an international boundary water, the State Board of Health is without jurisdiction, and the matter has been referred to the federal authorities.

The only other instance in Minnesota at the present time in which the sewage of one city is apparently affecting the water supply of another city is the case of Fergus Falls and Breckenridge, both of which are located on the Otter Tail River, the city of Breckenridge being dependent upon this river for its source of water supply. The indications are that the time will come eventually when it will be necessary to treat the sewage and trade wastes at Fergus Falls during dry weather periods in order to prevent an overload on the filtration plant at Breckenridge. This particular problem is now under consideration.

Up to this time, the dilution factor in such rivers as the Red Lake, and the Mississippi, has been sufficiently great to dispose of adequately the sewage discharged into them without materially affecting the water supplies of cities located farther down the stream. The best example of sewage disposal affecting the water supply of the same municipality is at Warroad where the sewer outlet is located about 200 feet above the water works intake on the same side of the river. A number of cases of typhoid fever have been caused by this arrangement largely among transients who were not acquainted with the local situation and used the water.

Many investigations by the Minnesota State Board of Health and others have demonstrated that the discharge of sewage into streams, lakes and rivers does not affect the sanitary quality of ice cut from these waters provided the sewage does not actually flow over the surface of the ice and that the water below the ice is of sufficient depth so that clear ice will be formed. It is a well-known fact that a large proportion of the chemical and bacterial impurities which are present in the water are removed when the water is frozen. No cases of typhoid fever have ever been traced in Minnesota to the use of ice.

The sewage disposal problem, i. e., when and where sewage treatment plants should be installed, is governed, in most instances, by aesthetic considerations in Minnesota at the present time. There is a marked tendency on the part of several municipalities against the discharge of sewage into lakes, especially where the lake in question is the principal scenic lake in the community. An example of this is found at Waseca, where the city is spending nearly a hundred thousand dollars in order to remove the sewer outlet from Clear Lake which is located almost within the city and which it is decided to preserve as a beauty spot. Another example is to be found at Graceville, where the village has recently constructed a new treatment plant and long outfall sewer in order to remove the disposal of sewage into Toqua Lake which is to be improved in connection with the development of a state park.

Most sewage treatment plants have been installed for the purpose of preventing local nuisances and in nearly all cases these plants consist simply of tanks for the clarification of the sewage by the removal of the settleable solids. In a few instances, the tank treatment is followed by some form of filtration. The following table gives a list of the municipal, state and institutional treatment plants in existence a the end of this biennium:

TABLE NO. 4

LIST OF MUNICIPAL AND LARGER INSTITUTIONAL SEWAGE TREATMENT PLANTS IN MINNESOTA

Location.	Treatment.	Final Disposal.
Ada	Septic tank*	Marsh River
Adrain	Imhoff tank	Kanaranzie River
Annandale	Imhoff tank	Pleasant Lake
Albany	Imhoff tank	Creek
Alexandria	Septic tank**	Lake Agnes
Anoka	Imhoff tank	Mississippi River
Anoka (Asylum for Insane)	Imhoff tank and sand filter	Rum River
Baudette	Septic tank	Baudette River
Bemidji	Septic tank	Mississippi River
Blackduck	Imhoff tank*	Ditch to Blackduck Lake
Blooming Prairie	Two Imhoff tanks and sand filter	Ditches
Bovey	Septic tank	Trout Lake
Butterfield	Imhoff tank	Creek
Canby	Septic tank	Lac qui Parle Creek
Chatfield	Imhoff tank	North fork of Root River
Chisholm	Imhoff tanks (2),* percolating filter and resettling tank	Long Year Lake
Claremont	Imhoff tank	Zumbro River
Crosby	Septic tank	Creek, outlet-Serpent Lake
Coleraine	Septic tank	Trout Lake
Deerwood	Imhoff tank	Meadow, drains to Serpent Lake
Detroit	Septic tank*	St. Clair Lake
Dodge Center	Imhoff tank	Zumbro River
Elbow Lake	Septic tank	Lake
Ely	Imhoff tank*	Shagawa Lake
Eveleth	Imhoff tank*	Creek
Fairmont	Imhoff tank*	Creek
Farmington	Imhoff tank	Vermillion River
Faribault (School for Feeble-Minded)	Imhoff tank	Straight River
Foley	Imhoff tank	Creek
Forest Lake	Imhoff tank	Clear Lake
Gaylord	Imhoff tank	Small Lake
Gilbert	Imhoff tank* and percolating filter	Mine ditch
Glencoe	Imhoff tank	Buffalo Creek
Glen Lake (Glen Lake Sanitorium	Imhoff tank* and disinfection	Creek
Glenwood	Septic tank*	Minnewaska Lake
Grove City	Imhoff tank	Swamp
Graceville	Imhoff tank	Ditch
Hallock	Septic tank	South branch of Two Rivers
Hopkins	Imhoff tank	Nine Mile Creek
Ironton	Imhoff tank	Creek to Blackhoof Lake
Janesville	Imhoff tank	Ditch
Kasson	Imhoff tank	Creek tributary to North Fork of Zumbro River
Kelliher	Imhoff tank	Pond
Kinney	Imhoff tank	Ditch
Lake Benton	Imhoff tank	Ditch to Benton Lake
Lake Crystal	Imhoff tank	Lily Lake
Lakefield	Imhoff tank*	Ditch to Heron Lake
Litchfield	Imhoff tank*	Ditch
Madison	Imhoff tank	County Ditch
Morris	Septic tank	Pomme de Terre River
Morris (West Central School of Agriculture)	Septic tank	Pomme de Terre River
Maple Lake	Imhoff tank	Creek
Mapleton	Imhoff tank	County Ditch
Mountain Iron	Imhoff tank	Creek
Nashwauk	Imhoff tank	Ditch
New Prague	Imhoff tank	Creek
Pipestone	Septic tank and sand filter	Creek
Proctor	Imhoff tank, percolating filter and resettling tank*	Kingsbury Creek

TABLE NO. 4—Continued

Location.	Treatment.	Treatment.
St. Louis County Poor Farm	Imhoff tank	Ditch
Sherburne	Imhoff tank	Creek
Sleepy Eye	Imhoff tank*	Sleepy Eye Creek
Staples	Imhoff tank	Hoyden Creek
State Sanatorium	Imhoff tank	Leech Lake
Taconite	Imhoff tank	Ditch
Tracy	Imhoff tank*	Ditch
Trommald	Imhoff tank	Ditch to Lake
Virginia	Imhoff tank with separate sludge digestion and percolating filter	Three Mile Lake
Wadena	Imhoff tank	Union Creek
Walnut Grove	Imhoff tank	Ditch
Warren	Imhoff tank	Snake River
Warroad	Imhoff tank	Warroad River
Wabasso	Imhoff tank	Ditch
Waseca	Septic tanks (2)**	Clear Lake
Wells	Imhoff tank	Creek
Westbrook	Imhoff tank	Ditch
Willmar	Imhoff tank*	County Ditch
Willmar (Insane Hospital)	Imhoff tank	Foot Lake
Worthington	Imhoff tank	County Ditch

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*Plant inadequate and should be rebuilt or enlarged.

**New Plants under consideration.

Probably one of the most serious difficulties in the way of satisfactory sewage treatment is the failure of many local authorities to care for a plant properly after it has been installed. Reports from other states indicate that this condition is by no means confined to Minnesota. This is not so much due to an unwillingness on the part of the local officials to give their time to these plans as to the lack of understanding as to what is necessary for their proper care. This is to some extent due to the frequent change in officials from year to year. The State Board of Health is without adequate funds with which to supervise the operation of these plants properly. The entire time of one man could be very profitably spent visiting the various municipalities where sewage treatment plants are located, and instructing the operators on the proper care of their plants. Many plans which are now operating with a relatively low degree of efficiency could be made to produce satisfactory results with a corresponding reduction in the number of complaints of nuisances from farmers and others who may be affected.

Industrial developments are, in a few instances, creating very unsatisfactory conditions, due to the discharge of large volumes of relatively concentrated wastes either separately or mixed with municipal sewage. Examples of this kind are to be found at Austin and Albert Lea, where packing house wastes tend to increase greatly conditions which are already unsatisfactory, and at Alexandria where the waste from a large creamery has created a nuisance in a pond into which it is discharged. The city of Austin has acquired a tract of land on which to locate a treatment plant, and has completed the construction of an intercepting sewer by means of which practically all of the sewage can be brought to the plant for treatment. Plans are now being developed for the construction of the new plant which, when completed, will be the largest in the state from a standpoint of the quantity of waste to be treated.

The following tables, which show the names of localities for which investigations were undertaken during the biennium and the number made for each locality, indicate that 221 field investigations were made for the 178 localities listed. One hundred two sets of plans were examined on sewerage systems for 94 localities. Laboratory examinations of sewage totaled 11. Eleven lectures were given on the subject of sewage disposal.

TABLE NO. 5

LIST OF FIELD INVESTIGATIONS ON SEWERAGE SYSTEMS SHOWING NUMBER UNDERTAKEN IN EACH LOCALITY

County.	Place.	Number.
Aitkin:		
	Swatara	1
Anoka:		
	Centerville	2
	Coon Rapids	1
Becker:		
	Lake Park	1
Beltrami:		
	Bemidji	2
	Debs	1
	Nebish	2
	Spooner	1
Benton:		
	Foley	1
Big Stone:		
	Big Stone	1
Blue Earth:		
	Garden City	1
	Rapidan	1
Carlton:		
	Automba	1
	Kettle River	2
	Mahtowa	1
	Wrenshall	1
Carver:		
	Chaska	1
	Mayer	1
	Norwood	1
	Victoria	2
Cass:		
	Hackensack	1
	Pine River	1
	State Sanatorium	2
Chisago:		
	Chisago City	2
	Harris	1
	Shafer	1
Clay:		
	Averill	1
	Ulen	1
Cook:		
	Grand Marais	1
	Lutsen	1
Cottonwood:		
	Bingham Lake	1
	Storden	1
Dakota:		
	Castle Rock	1
Dodge:		
	Dodge Center	1
	Mantorville	1
Douglas:		
	Brandon	1
Faribault:		
	Wells	2
Fillmore:		
	Newburg	1
Freeborn:		
	Albert Lea	1
Goodhue:		
	Cannon Falls	1
	Dennison	1
	Kenyon	1
	Pine Island	1
	Red Wing	1
	Wanamingo	1
Grant:		
	Herman	1
Hennepin:		
	Eden Prairie	1
	Excelsior	2
	Glen Lake	1
	Hopkins	3
	Lake Minnetonka (Big Island)	1
	Linwood	1
	Minneapolis	1
	Minnetonka Mills	2
	Richfield	2
	Robbinsdale	2
	St. Bonifacius	1
	Wayzata	2
Houston:		
	Caledonia	2
	La Crescent	1
	Spring Grove	1
Hubbard:		
	Dorset	2
	Farris	1
	Nary	1
Isanti:		
	Braham	1
Itasca:		
	Ball Club	1
	Calumet	1
	Deer River	1
	Taconite	1
Jackson:		
	Wilder	1
Kanabec:		
	Ogilvie	1
Kittson:		
	Bronson	1
	Lancaster	1
Koochiching:		
	Alvina	1
Lac qui Parle:		
	Bellingham	1
	Hamlin	2
	Madison	2
Le Sueur:		
	Le Sueur	1
Lincoln:		
	Arco	1
	Hendricks	1
	Verdi	1
Lyon:		
	Taunton	1

TABLE NO. 5—Continued

County.	Place.	Number.
McLeod:		
	Biscay	1
	Silver Lake	1
Mahnomen:		
	Waubun	1
Marshall:		
	Stephen	1
Martin:		
	Fairmont	2
	Monterey	1
	Sherburn	2
	Triumph	1
Meeker:		
	Litchfield	1
Morrison:		
	Flensburg	1
	Hillman	1
	Upsala	1
Mower:		
	Austin	3
Murray:		
	Chandler	1
	Slayton	1
Nobles:		
	Adrian	1
	Bigelow	1
Norman:		
	Borup	1
	Twin Valley	1
Olmsted:		
	Eyota	1
	Rochester	1
	Salem Corners	1
Otter Tail:		
	Battle Lake	1
	Deer Creek	2
	Fergus Falls	1
	Henning	1
	Parkers Prairie	1
	Underwood	1
Pennington:		
	St. Hilaire	1
Pine:		
	Brook Park	1
	Duquette	1
	Pokegama	1
	Willow River	2
Polk:		
	Dugdale	1
	Fosston	2
	Mentor	3
Pope:		
	Farwell	1
	Starbuck	1
Redwood:		
	Sanborn	1
	Wabasso	1
	Walnut Grove	2
Renville:		
	Morton	2
	Olivia	2
	Renville	1
	Sacred Heart	1
Rice:		
	Faribault	1
Rock:		
	Beaver Creek	1
	Hills	1
Scott:		
	Jordan	1
	Shakopee	1
Sherburne:		
	Elk River	1
Sibley:		
	Arlington	2
	Winthrop	1
St. Louis:		
	Angora	1
	Babbitt	1
	Buhl	2
	Chisholm	1
	Duluth	2
	Elba	2
	Ely	1
	Gilbert	4
	Hibbing	2
	Iron Junction	1
	Kinney	2
	Meadowlands	1
	Soudan	1
	Tower	1
Stearns:		
	Freeport	1
	St. Cloud	1
	Sauk Centre	2
	Waite Park	1
Steele:		
	Medford	1
	Owatonna	2
Stevens:		
	Hancock	1
Swift:		
	Danvers	1
	Holloway	1
Todd:		
	Bertha	2
	Grey Eagle	1
	Hewitt	1
	Long Prairie	1
Traverse:		
	Browns Valley	1
Wabasha:		
	Elgin	1
	Wabasha	1
Wadena:		
	Menahga	1
Washington:		
	Lake Elmo	2
Watonwan:		
	Madelia	1
	St. James	1
Wilkin:		
	Campbell	1
Winona:		
	Fremont	1
	Lewiston	1
	Winona	1
Wright:		
	Cokato	1
	Delano	1
	Monticello	1
	South Haven	1
Yellow Medicine:		
	Porter	1
	Total	221

TABLE NO. 6

LIST OF PLAN EXAMINATIONS ON SEWERAGE SYSTEMS SHOWING NUMBER UNDERTAKEN FOR EACH LOCALITY

County. Place.	Number.
Aitkin:	
Swatara	1
Anoka:	
Centerville	1
Becker:	
Detroit	1
Lake Park	3
Beltrami:	
Nebish	1
Spooner	1
Blue Earth:	
Pemberton	1
Carlton:	
Automba	1
Cloquet	1
Kettle River	1
Wrenshall	1
Cass:	
Pine River	1
Chisago:	
Chisago City	1
North Branch	1
Rush City	1
Shafer	1
Clay:	
Moorhead	2
Cook:	
Lutsen	1
Crow Wing:	
Trommald	1
Dakota:	
Mantorville	1
West St. Paul	1
Dodge:	
Douglas:	
Alexandria	1
Brandon	1
Faribault:	
Elmore	1
Wells	1
Goodhue:	
Pine Island	1
Zumbrota	1
Hennepin:	
Richfield	1
Robbinsdale	1
Wayzata	1
Houston:	
Caledonia	1
Spring Grove	1
Isanti:	
Cambridge	1
Itasca:	
Taconite	1
Jackson:	
Wilder	1
Kandiyohi:	
Willmar	1
Kittson:	
Bronson	1
Le Sueur:	
New Prague	1
Lincoln:	
Hendricks	1
Lake Benton	1
Marshall:	
Stephen	1
Martin:	
Triumph	1
Morrison:	
Hillman	1
Little Falls	1
Upsala	1
Mower:	
Murray:	
Currie	1
Nicollet:	
St. Peter	2
Nobles:	
Bigelow	1
Ellsworth	1
Norman:	
Halstad	1
Twin Valley	1
Olmsted:	
Rochester	1
Otter Tail:	
Fergus Falls	4
Pennington:	
Thief River Falls	1
Pine:	
Duquette	1
Sandstone	1
Willow River	1
Polk:	
Dugdale	1
Fertile	1
Mentor	1
Red Lake:	
Red Lake Falls	1
Redwood:	
Wabasso	1
Renville:	
Renville	1
Rock:	
Beaver Creek	1
Hills	1
Scott:	
Jordan	1
St. Louis:	
Le Roy	1
Angora	1
Buhl	1
Duluth	1
Elba	1
Eveleth	1
Gilbert	2
Hibbing	1
Kitzville	1
Mountain Iron	1
Tower	1
Stearns:	
Albany	1
Freeport	1
Sauk Centre	1
Waite Park	1
Stevens:	
Hancock	1
Swift:	
Benson	1
Danvers	1
Todd:	
Hewitt	1
Long Prairie	1

TABLE NO. 6—Continued

County. Place.	Number.	County. Place.	Number.
Wabasha:		Wright:	
Plainview	1	Annandale	1
Zumbro Falls	1	Howard Lake	1
Waseca:		Yellow Medicine:	
Janesville	1	Hanley Falls	1
Washington:			
Lake Elmo	1		
Winona:			
Winona	1	Total	102

REFUSE DISPOSAL

The disposal of refuse, especially garbage, is a subject that has not been given much study in this state. The Division has not been able to devote much time to the subject, owing to the pressure of other work. A survey of the methods of disposal of garbage and refuse in municipalities in the state should be undertaken with the view of determining the most sanitary and economical method of disposing of such wastes in the cities and villages of various sizes throughout the state. In order to make such a survey, additional funds would be required.

Investigations on garbage disposal were undertaken at Ely, Hopkins, and Virginia, during the biennium.

PUBLIC BUILDINGS

The State Board of Health is required by law to examine the plans of buildings for county tuberculosis sanatoria. A preliminary field investigation is undertaken if there is not sufficient information in the records of the Division on which to give a satisfactory approval of the plans. Plans were examined during the biennium for a nurses home at the Southwestern Minnesota Tuberculosis Sanatorium at Worthington, and for a nurses home at the Nopeming Sanatorium, Nopeming.

TABLE NO. 7

SUMMARY OF WORK UNDERTAKEN DURING BIENNIUM

Subject.	Field Investigations.	Plans Examinations.	Lectures.	Laboratory Examinations		
				Bacterial.	Physical.	Chemical.
Water supplies	475	76	15	1,798	511	511
Milk supplies	131	...	12	3,232	1,647	1,628
Sewerage systems	221	102	11	.....	11	11
Refuse disposal	3	...	...	.....	.....	.....
Public buildings	...	2	...	.....	.....	.....
Total	830	180	38	5,030	2,169	2,150

CONCLUSION

The demands made of the Division by the people of the state during the past few years, for assistance in correcting unsatisfactory conditions associated with water supplies, milk supplies, sewerage systems, and other sanitary problems, have far exceeded the ability of the Division to meet these demands with the funds which are now available for this work. It has been necessary to refuse assistance on many problems which should have been investigated, and to undertake only those which have been of a more urgent character.

The increase in the demands for assistance on all problems of a sanitary nature, and the amount of work which the Division is able to carry on with the funds at present appropriated for this work, shows that there is a distinct need for more funds with which to carry on present activities and to give assistance on other problems which need attention at this time.

The general sanitary supervision work on public water supplies should be increased, and more intensive work should be done on water purification plants.

More assistance should be given municipalities in establishing local supervision of their milk supplies, and in the general supervision of milk pasteurization plants.

Studies should be undertaken on the pollution of certain streams and lakes in order to provide information on which to form a basis for intelligent legislation, which will prevent the gross pollution of streams and lakes with sewage and trade wastes, etc., for the protection of farmers and other riparian owners. Routine investigations should be made on public sewerage systems, and more assistance should be given to communities in the operation of sewage treatment plants.

A survey should be made of the methods now in use for the disposal of refuse, especially garbage, in municipalities, so that information would be available on which recommendations could be made as to the most sanitary and economical methods of disposal for cities and villages of varying sizes throughout the state.

Routine sanitary investigations should be made on tourist camps, summer camps, industrial camps, picnic grounds and fair grounds so that the unsatisfactory sanitary conditions which exist at some of these places can be corrected.

Minnesota State Board of Health

DIVISION OF VENEREAL DISEASES

Report for Biennial Period

January 1, 1920, to December 31, 1921

By H. G. Irvine, M. D., Director

MINNESOTA STATE BOARD OF HEALTH

DIVISION OF VENEREAL DISEASES

Biennial Report, January 1, 1920, to December 31, 1921

By H. G. IRVINE, M. D., Director

The general plan of the work of the Division has been followed as outlined in the biennial report of 1918–19. Certain details of work have increased and necessitated changes, variation in money available has made increased activity possible at certain times and necessitated curtailment at others. While the money available from legislative appropriation has remained the same, $30,000.00 per year, there has come to the Division certain federal funds under act of congress and these have varied. For the fiscal years July, 1918, to July, 1920, Minnesota received $22,568.85 each year; for the fiscal year July, 1920, to July, 1921, Minnesota received $12,330.39. It is apparent, therefore, that from July, 1921, to December 31, 1920, of this biennium the Division operated under state appropriation only.

PERSONNEL OF DIVISION

Director	H. G. Irvine, M.D.
Assistant Director	L. W. Feezer
Field Physician	D. Stern, M.D., from March, 1920
Supervisor of Education	Mabel S. Ulrich, M.D., to July, 1920 Margaret Sheridan, from July, 1920
Bacteriologist	R. M. Sperry, discontinued in May, 1921 Carried by Field Physician
Chief Social Worker	Charlotte A. Feezer, to October, 1920 Audrey Walton, from December, 1920

CO-OPERATION WITH STATE INSTITUTIONS

One of the important pieces of work of this biennium has been the stimulating of proper examinations of suspected cases, and proper treatment of known cases of venereal disease, in certain state institutions. At Sauk Center there is now being done one of the best pieces of work in the United States. Every girl is carefully examined and is given, if necessary, the very best of treatment. This has been brought about by conferences between the Board of Control and this Division. The Board of Control has co-operated by securing the full time services of a woman physician and the consultation service of a specially trained physician. Special treatment rooms have been built and hospital facilities increased. All laboratory work, such as Wassermanns and examination of smears has been done by the Division of Venereal Diseases. A similar work has been stimulated at St. Cloud, at Fergus Falls, and at Stillwater. All laboratory work is done by us.

EDUCATIONAL WORK

The educational work has gone forward largely in accordance with the scheme outlined for carrying it on at the time when the work was begun. The extent of this work has varied from time to time, as will appear in the tables, largely in accordance with the amount of money available. This work differs from almost every other part of the program of the Division in that it can be done intensively when it is desired to do so, and for short times entirely abandoned, if necessary. Other work of the Division is more largely governed by circumstances not within our own control and has to be carried on routinely from day to day. When the federal funds were withdrawn at the beginning of the fiscal year, 1921–1922, a number of cuts were made. Two field lecturers who had been employed, were discontinued, and Miss Margaret Sheridan, Supervisor of Social Hygiene Education, upon her own offer was reduced in salary $200.00 per year. Miss Sheridan succeeded Dr. Mabel Ulrich in charge of this work on June 30, 1920 (Dr. Ulrich having gone to the Northern Division of the American Red Cross), and continued in charge of it throughout the biennium.

Only one new educational pamphlet has been prepared during the biennium, namely "Sign Posts on the Road to Health." This is a small leaflet intended to be distributed to girls and was prepared by Miss Sheridan and Mr. Freezer.

Attention is called to the "Keeping Fit" campaign which was carried on particularly intensively during the first half of 1920. The field work was done chiefly by Miss Mabel Sheridan, and during a considerable part of the time there was also another worker in the field. Four sets of placards for girls, corresponding to the "Keeping Fit" placards for high school boys which have been distributed, were prepared in our own Division under the direction of Dr. Ulrich. There were 41 cards in each set, many of which were appropriately illustrated with colored pictures. The text deals largely with general health and rules of conduct, no great stress being laid on venereal disease. Form letters were sent to prominent persons in counties throughout the state offering this material, and asking for their co-operation. The "Keeping Fit" placards for boys were also used, as were the films "The End of the Road," "Fit to Fight," and "How Life Begins." In general the campaign was carried on at each place in co-operation with local agencies. The help of local people, particularly the public health nurse. was made use of in arranging for a number of shows at each town. Separate programs were worked out to reach parents and teachers associations, mothers' clubs, school children and a general mixed audience at a public meeting.

The placards above mentioned were exhibited in the office of the Public Health Service in Washington for a time, and attracted a great deal of attention. Their presentation led to the preparation of a similar set by the Public Health Service, which has since been lithographed and can now be purchased, and is in use extensively throughout the country.

TABLE I

EDUCATIONAL WORK

	1920	1921
Number of pamphlets distributed	167,081	52,528
Number of exhibit days	439	232
Attendance at exhibits	73,493	36,720
Film shows	132	104
Attendance at film shows	41,412	20,120
Lectures	108	62
Attendance at lectures	3,200	3,330
Number of towns reached	178	167

LABORATORY

The work of the laboratory continues to grow. Table No. II indicates how great this growth has been. In May, 1921, Mr. R. M. Sperry, who had been bacteriologist, resigned and Dr. D. Stern took over the charge of the laboratory in addition to his field work. We believe that the work of this laboratory constitutes a valuable and important service to the medical profession, and through the profession to the people of the state. The basis upon which it is done without charge constitutes an enormous saving, as compared to the charges in private laboratories, and on account of the inability of patients to pay for such tests, they would not be done at all in a great many cases, to the great detriment of the patient and of the profession as well. During the biennium colloidal gold serological tests on spinal fluid was instituted, in order that the physicians might be further assisted in the diagnosis of nerve syphilis.

TABLE II

LABORATORY

	Wassermann		G. C. Smears		Dark Field		Serological		Total	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
January	766	2,034	142	293	2	3	....	....	910	2,330
February	588	1,918	126	364	3	6	....	....	717	2,288
March	1,136	2,079	179	344	....	2	....	....	1,317	2,425
April	1,059	1,938	178	390	2	5	....	....	1,239	2,333
May	1,004	1,886	213	335	....	2	....	....	1,217	2,223
June	1,056	1,824	214	394	2	5	....	17	1,272	2,240
July	1,292	1,877	230	356	6	11	....	27	1,528	2,271
August	1,436	1,982	225	518	4	5	....	62	1,665	2,567
September	1,563	1,927	315	438	3	2	....	6	1,881	2,373
October	1,747	2,021	315	525	2	3	....	38	2,064	2,569
November	1,549	1,871	605	511	5	3	....	24	2,159	2,409
December	1,768	1,914	476	507	4	2	....	4	2,248	2,427
Annual Total	14,964	23,272	3,218	4,975	33	49	....	178	18,215	28,474

SOCIAL SERVICE

As in the case of the educational work, the volume of Social Service work carried on has varied, to a certain extent, in accordance with the funds available, but here it is more difficult and perhaps more detrimental to the work to permit so much variation as has been done in the case of the educational work. On October 1, 1920, Mrs. Charlotte A. Feezer, who had been in charge of the Social Service Work, resigned, and was replaced, after a lapse of a month, by Miss Audrey Walton.

The Social Service has grown slowly, but fairly steadily, more in the intensive nature of the work done than in the volume of cases registered. The tendency has been constantly to make more use of co-operative agencies such as Public Health Nurses, County Child Welfare Boards, or social workers, where they existed in smaller communities, and of all the social agencies in the cities. This is in accordance with a fixed purpose of decentralization and making communities bear their own burdens. Tables III and IV show volume and distribution of work. Particular attention is called to the chart showing the organization of the work of the Division at the beginning of this report, in connection with Social Service. From this chart will be seen that the function of our Social Service subdivision are tied up very closely with a great many of the other portions of the field covered by the Division.

TABLE III

SOCIAL SERVICE

Cases Handled

	Carried Over		New		Recurrent		Total Handled	
	1920	1921	1920	1921	1920	1921	1920	1921
January	100	67	144	186	44	38	288	291
February	82	135	138	175	37	30	257	340
March	115	141	155	220	25	39	295	400
April	140	125	245	268	79	28	464	421
May	231	137	177	196	51	48	459	381
June	150	193	163	181	26	13	339	387
July	207	127	178	142	71	34	456	303
August	78	136	147	149	86	25	311	310
September	112	62	216	184	64	31	392	277
October	135	96	120	177	30	39	285	326
November	52	120	168	161	25	32	245	313
December	93	166	176	97	39	53	308	302
Annual Total	1,495	1,505	2,027	2,136	577	410	4,099	4,051
Total for Biennium	3,000		4,163		987		8,150	

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[*] **Carried Over** refers to cases which were being worked on at the end of a given month but had not been closed when the report for that month was made up.

[†] **New** refers to the cases listed for social service investigation in this office for the first time.

[‡] **Recurrent Cases** are those which had been closed but were re-referred because of some further or new delinquency and hence requiring to be handled again. In dealing with the type of individuals who are the subjects of a large part of the Social Service work, it is inevitable that a considerable volume of recurrences must be expected. An illustration may be given of the type of recurrence which is frequent but entirely unavoidable. The young girl sex delinquent who is reported as a source of venereal infection. Upon investigation, we are often obliged to secure her committment to an institution where she will both be isolated from the possibility of infecting others and will also receive treatment. Yet after discharge from institutional control, many such cases are again referred (even though cured when discharged) as sources of infection. This type of case will be certain to recur as subject of our efforts from time to time, as long as she remains in the State.

TABLE IV
LOCATION OF NEW AND RECURRENT CASES BY MONTHS

	Minneapolis		St. Paul		Duluth		Elsewhere		Total	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
January	49	122	82	36	36	52	21	14	188	224
February	84	81	36	36	33	54	22	34	175	205
March	104	138	20	40	28	50	28	31	180	259
April	193	141	52	71	39	48	35	36	319	296
May	73	112	43	62	17	43	95	27	228	244
June	79	86	33	30	16	47	61	31	189	194
July	114	85	48	60	23	2	64	29	249	176
August	90	76	63	61	34	4	66	33	253	174
September	113	102	99	46	35	12	33	55	280	215
October	53	129	31	60	21	11	45	30	150	230
November	50	96	54	60	77	8	12	29	193	193
December	96	64	40	54	48	2	31	16	215	136
Annual Total	1,098	1,232	601	616	407	333	513	365	2,619	2,546
Biennial Total	2,330		1,217		740		878		5,165	

DISTRIBUTION OF ARSPHENAMINE

It was the practise of this Division in the previous biennium to distribute arsphenamine free to clinics and public hospitals for administration to patients, and to a considerable extent also state institutions were supplied with this drug. With the withdrawal of federal aid and in accordance with the plan of decentralization this has been discontinued with the exception of a few instances. A small number of ampules have been sent to certain institutions for particular cases, and some to physicians in rural communities for the treatment of indigent patients where arrangements have been made for the administration of the treatment by the physician either without compensation, or at the expense either of the county poor authorities, or some local agency. The Social Service work has been tied up more and more closely with the distribution of arsphenamine in the arranging of treatment for such patients.

TABLE V
ARSPHENAMINE DISTRIBUTED MONTH BY MONTH
By Size of Dose

	.45 grams		.6 grams		.9 grams		Total All Sizes	
	1920	1921	1920	1921	1920	1921	1920	1921
January	66	167	629	892	17	....	712	1,059
February	100	268	292	512	....	25	392	805
March	112	239	578	1,091	50	60	740	1,390
April	154	156	392	495	16	....	562	651
May	175	60	275	220	225	....	675	280
June	115	....	193	345	....	10	308	355
July	285	13	793	96	18	....	1,096	109
August	104	96	399	128	306	34	809	258
September	28	....	614	6	....	....	642	6
October	387	20	581	132	273	....	1,241	152
November	66	11	471	75	9	....	546	86
December	100	....	354	14	....	....	451	14
Annual Total	1,692	1,030	5,571	4,006	914	139	8,177	5,165
Biennial Total	2,722		9,577		1,053		13,342	

CLINICS

During the previous biennium clinics were organized as follows:

Wells Memorial, Minneapolis, Minn.
University Night Clinic, Minneapolis, Minn.
General Hospital Night Clinic, Minneapolis, Minn.
St. Paul Dispensary, St. Paul, Minn.
South St. Paul Clinic, South St. Paul, Minn.
St. Mary's Hospital, Duluth, Minn.
Virginia Clinic, Virginia, Minn.

With the loss of federal funds these were either decentralized or discontinued, and with the exception of one, we were successful in having arrangements made for their continuance at the expense of patients or at the expense of some other agency. The one in St. Paul was taken over by the United Charities, fees being charged patients which partly covered the cost. The City Health Department in Duluth took over the expense of maintaining the clinic there and with it the salary of Miss Dietrich, social worker, previously on our payroll. The clinic at Virginia was discontinued. This clinic at no time appeared to justify itself. The one in South St. Paul which had been started but a short time was continued by the Dakota County Welfare Association, charges being made for services. Wells Memorial was put on a pay basis and continued. The night clinic for men at the university was by arrangement with the authorities at the Medical School, placed on a pay basis, the receipts being divided and a certain proportion returned to the University to compensate for the expenses of light, heat, drugs and supplies, the balance being turned over to the State Board of Health to cover the expense of salaries which are still paid by the funds of this Division. In all cases where charges are made, they are well below those made by physicians and cover only actual costs of operating.

The fees charged at the University Night Clinic are as follows:

Registration	$0.10
Drugs	cost
Treatment for G. C.	.50
Mercury treatment for syphilis	.50
Arsphenamine treatment	1.00

Arsphenamine treatments were first priced at $1.50 but after a short period it was discovered that the clinic could be maintained without loss at a lesser charge.

TABLE VI

ADMISSION AND TOTAL TREATMENTS FOR ALL CLINICS REPORTING

	Admission		Treatments	
	1920	1921	1920	1921
January	129	147	2,443	3,294
February	130	112	2,243	3,152
March	124	115	2,665	3,713
April	142	99	2,455	3,439
May	160	105	2,564	3,069
June	152	124	2,612	873
July	114	130	2,673	2,971
August	174	96	2,889	3,350
September	165	70	2,899	2,201
October	104	86	3,218	2,279
November	102	79	2,923	2,072
December	150	103	3,004	2,116
Annual Total	1,647	1,266	32,588	34,579
Biennial Total	2,913		67,167	

REPORTING CASES

Below are shown tables indicating the number of cases reported month by month throughout the biennium, and also certain other tables showing special data which has been tabulated from these reports.

TABLE VII

VENEREAL DISEASE REPORTING

	1920				1921			
	Syph.	Gon.	Chan.	Total	Syph.	Gon.	Chan.	Total
January	308	397	18	713	590	663	43	1,296
February	264	424	7	695	486	426	24	936
March	509	492	19	1,020	586	550	25	1,061
April	397	482	15	894	408	439	15	862
May	392	503	13	908	285	372	13	670
June	317	535	16	868	314	537	10	861
July	411	760	16	1,187	291	525	10	826
August	379	509	18	906	414	667	18	1,099
September	452	514	26	992	303	545	11	858
October	359	516	19	894	402	502	15	919
November	321	478	32	831	375	563	11	949
December	342	410	29	781	361	488	7	856
Total	4,451	6,020	288	10,699	4,815	6,277	202	11,294

TABLE VIII

Showing percentage of cases reported from physicians in private practice in which the name of the patient is given.

Note: All institutional and clinic cases have been reported by name.

	1920			1921		
	Total	Name Given	Per Cent	Total	Name Given	Per Cent
Minneapolis	3,699	1,566	42	3,006	1,580	52
St. Paul	1,439	788	55	1,363	790	58
Duluth	710	526	74	639	455	71
Rural and smaller towns	1,708	1,357	79	1,755	1,581	90
Total for state	7,556	4,248	56	6,763	4,406	65

TABLE IX

COMPARING NUMBER OF CASES REPORTED MONTH BY MONTH WITH NUMBER OF POSITIVE FINDINGS IN LABORATORY SPECIMENS

	1920				1921			
	Syphilis		Gonorrhoes		Syphilis		Gonorrhoes	
	Cases	Pos. Wass.	Cases	Pos. Smear	Cases	Pos. Wass.	Cases	Pos. Smear
January	308	105	397	57	590	268	663	82
February	264	83	424	52	486	327	426	101
March	509	160	492	75	586	270	550	98
April	397	121	482	63	408	161	439	104
May	392	129	503	79	285	179	372	152
June	317	149	535	94	314	175	537	222
July	411	185	760	99	291	208	525	183
August	379	271	509	122	414	241	667	239
September	452	284	514	130	303	214	545	219
October	359	257	516	141	402	228	502	215
November	321	130	478	99	375	281	563	207
December	342	195	410	89	361	301	488	182
Total	4,451	2,069	6,020	1,100	4,815	2,853	6,277	2,004

TABLE X

SHOWING NUMBER OF CASES AND PER CENT OF CASES IN EACH OF THE AGE GROUPS INDICATED FOR THE TWO YEARS 1920-1921

	Number of Cases		Percentage	
	1920	1921	1920	1921
Under 16	350	706	3.5	6.8
16 to 20	1,509	1,297	15.4	12.5
21 to 25	2,646	2.835	27	27.5
26 to 30	1,938	2.110	19.7	20.5
31 to 35	1,267	1,185	12.9	11.5
36 to 40	818	863	8.4	8.4
41 to 45	497	529	5	5.3
46 to 50	327	290	3.4	2.8
Over 50	459	486	4.7	4.7
Total	9,761	10,301		

Note: These totals do not coincide with total number of cases reported during these years because not all case reports indicate the age of patient.

CONCLUSION

In conclusion it would appear that all of the work going on ought to be continued. There is a constantly changing group of young people approaching the age when they must be informed of these diseases, their danger, their disastrous results and something of the possibilities of their diagnosis, treatment and control. Fathers and mothers must be better prepared to talk to their children on these subjects and the State Board of Health is the logical organization to carry on this educational work. From the standpoint of treatment and control local work should be stimulated and this burden placed upon the community. The community should also be forced to bear its share of the cost of treatment.

In a large measure the success of this work depends upon the medical profession. In this state there has been the best of co-operation and credit should accordingly be given. Every effort should be made to work with physicians for through them the people secure most of their benefits and they are the logical point of contact between the state organization and the people.

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